FURNISHED BY THE ... Fund.

Public Library
RECEIVED
FEB 15 1905
Washington, D. C.

VOL. LXXXVII
FEBRUARY 11, 1905
No. 1520

THE AMERICAN ARCHITECT AND BUILDING NEWS

ARCHITECTVRE

ENGINEERING

DECORATION

CONSTRVCTION

NEW YORK
TIMES BUILDING, BROADWAY AND 42D STREET

REGULAR EDITION

CONTENTS

TEXT PP. 41-52 and IV-XVII

SUMMARY.
THE RELATION OF THE ENGINEER TO THE ARCHITECT.
THE RELATION OF SPECIALISTS TO ARCHITECTS.
REPORT OF THE COMMITTEE ON EDUCATION, A. I. A.
CHICAGO LETTER.
STREET ARCHITECTURE—II.
NOTES AND CLIPPINGS.
SOCIETIES, ETC.
BUILDING NEWS.

ILLUSTRATIONS.

HOUSE AT IPSWICH, MASS.
HOUSE AT WELLESLEY, MASS.
HALL OF THE NATIONAL GEOGRAPHICAL SOCIETY, WASHINGTON, D. C.
CHIMNEYPIECE, 115 EAST 69TH ST., NEW YORK, N. Y.
MEMORIAL LIBRARY, BRIMFIELD, MASS. (Two Plates.)
HEINEMANN PICTURE-GALLERY, MUNICH, BAVARIA.
HOUSE AT NORTH ANDOVER, MASS.

Additional Illustrations in the International Edition.

DETAIL OF CENTRAL DOORWAY; ST. BARTHOLOMEW'S CHURCH, NEW YORK, N. Y.
DETAIL OF LEFT-HAND DOORWAY; ST. BARTHOLOMEW'S CHURCH, NEW YORK, N. Y.

An
Encyclopædia
of

Colonial Architecture

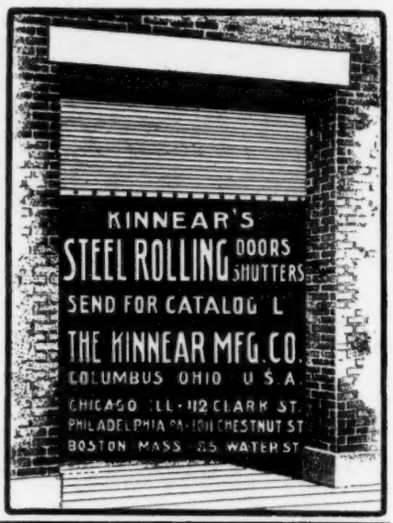
"THE GEORGIAN PERIOD"

"Nothing so comprehensive and systematic has been attempted before."—*New York Times*

"Of extraordinary importance to the architect where ambition rises above the building of cottages."—*Boston Transcript.*

A descriptive, illustrated catalogue will be sent on request by the publishers.

THE AMERICAN ARCHITECT
PUBLISHERS
TIMES BUILDING *NEW YORK CITY*



THE STANDARD
for over forty years. Frink's Reflectors. All sizes and shapes for every conceivable purpose. State your wants and we can meet them. Investigation means adoption.
I. P. FRINK, 551 PEARL ST., NEW YORK

Alphabetical List of Advertisers.

(For Classified List see Cover 3.)

A

Algonquin Red Slate Co. ix
American Asphaltum & Rubber Co..x
American Mason Safety Tread Co..xii
American Sheet and Tin Plate Co. e-o-w, xv
Architect and Contract Reporter.....ii
Art Metal Construction Co.....x
Associated Expanded Metal Co.....xvi
Atlas Portland Cement Co. o-a-m, xv

B

Barrett Mfg. Co.....xiii
Batcheider & Co., C. H.....xvii
Benedict & Burnham Mfg. Co. e-o-w, xviii
Berger Mfg. Co.....iv
Building News. xi
Butcher Polish Co.....e-o-w, ix

C

Cairns, Hugh.....xvii
Campbell, Walter M.....xii
Chicago & Alton Ry xviii
Craig, David .....e-o-w, xvii
Crane Co.....ix
Cudell, F. E..... e-o-w, xvii
Cummings Filter Co..... ix
Cutler Mfg. Co.....iv

D

Dadmun Leon E.....xvii
Deane, E. Eldon.....xii
Dixon Crucible Co., Joe.....ix

E

Elevator Supply and Repair Co.....iii
Elston, A. A.....xvii
Eickson Electric Equipment Co...xvii

F

Fisher Co., Robert C.....iii
Fowle, Herbert xvii
French & Co., Samuel H.....ix
Frink, I. P.....ii

G

Gilbreth, Frank B.....xvii
Gilbreth Seam-face Granite Co....xvii
Globe Ventilator Co.....xix
Goerz, C. P.....v
Gurney Heater Mfg. Co.....xx

H

Hartmann Bros. Mfg. Co.....xv
Harvard University.....iii
Hayes, Geo.....v
Hecla Iron Works..... xv

I

Illinois Steel Co.....xx
Imperial Expanded Metal Co.....xvi

J

Jackson & Co., Wm. H.....xx
Jenkins Bros.....x
Johnson & Co., H. A.....xvii
Jones, T. W.....e-o-w, v

K

Kinnear Mfg. Co., The.....ii

L

Lawrence Scientific School.....iii
Loomis-Manning Filter Co.....iii
Lord & Burnham Co.....v

M

Mass. Institute of Technology.....iii
Miller & Bro., James A.....v
Morrill & Whiton Construction Co..xvii
Morrill, E. L.....xii
Morse, Williams & Co.....viii
Moss, Chas. E.....xvii
Mott, J. L.....xvi

N

National Fireproofing Co.....v
Neuchatel Asphalt Co.....x
New England Tank and Tower Co. e-o-w, xvii
New Jersey Zinc Co.....o-a-m, ix
New York Belting & Packing Co. e-o-w, xi
New York Metal Ceiling Co.....iv
Northwestern Terra Cotta Co.....xii

O

Ohio State University.....iii
Okonite Co. (Ltd.).....e-o-w, iv

P

Pitt, W. R.....o-a-m, xiv

R

Richey, Browne & Donald.....x
Richter Mfg. Co.....xiii
Rider-Ericsson Engine Co.....xvii
Rutan, W. L.....xvii

S

Samson Cordage Works.....e-o-w, x
Shirley Radiator Co.....xii
Silver Lake Co.....xvii
Simpson Bros. Corporation.....xvii
Sleep, Elliot & King Co.....xvii
Smith & Co., Edward.....iii
Smith Co., H. B.....e-o-w, xvii
Society of Beaux-Arts Architects....iii
Spaulding Print Paper Co.....xvii
Standard Fire-escape & Mfg. Co....xvii
Standard Sanitary Mfg. Co.....iv
Sturtevant Co., B. F.....xi

T

Taylor Co., N. & G.....e-o-w, vi
Taylor, J. W.....xii
Thorn, J. S. Co.....e-o-w, v
Troy Laundry Machinery Co.....xx
Truss Metal Lath Co..... xvi

U

University of Pennsylvania.....iii
United States Foundry and Sales Co.xv
U. S. Mineral Wool Co.....v

V

Vaile & Young.....xx

W

Warren Chemical & Mfg. Co.....x
Washington University.....iii
Williams, John xv
Winslow Bros. Co., The.....iii
Wister, L. & R., & Co.....o-a-m, vi

Y

Yale & Towne Mfg. Co... xv

THE AMERICAN ARCHITECT
AND
BUILDING NEWS

A WEEKLY JOURNAL OF CONSTRUCTIVE AND DECORATIVE ART.

Vol. LXXXVII. SATURDAY, FEBRUARY 11, 1905. No. 1520

LOOMIS FILTERS
ESTABLISHED 1880.
Improved System. Simple and Effective.
LOOMIS-MANNING FILTER CO.,
Main Office: 828 Land Title Bldg., Broad and Chestnut Streets, PHILADELPHIA.
Boston. New York. Baltimore. Washington.

ELECTRIC SIGNALS FOR PASSENGER ELEVATORS
ELEVATOR SUPPLY & REPAIR CO.
136 LIBERTY ST. NEW YORK 34 W. MONROE ST. CHICAGO

THE WINSLOW BROS. CO.
Ornamental Iron and Bronze
CHICAGO NEW YORK
New York Office: 160 Fifth Avenue

"Norman Monuments of Palermo"
BY ARNE DELHI
Illustrated with 50 Plates, 13" x 17½".
Price bound, $10.00. *Unbound*, $9.00.
THE AMERICAN ARCHITECT, Publishers.

"MONUMENTAL STAIRCASES."
40 Gelatine Plates, on bond paper, 9" x 11".
In Envelope. Price, $5.00.
THE AMERICAN ARCHITECT, Publishers.

"THE LIBRARY OF CONGRESS"
20 *Plates, folio. Price*, $5.00.
THE AMERICAN ARCHITECT, Publishers.
New York and Boston.

"SEATS OF THE COLONISTS"
Folio, 10 *x* 14 *in.*
Measured drawings and photographs of examples of Colonial furniture.
PRICE, $5.
THE AMERICAN ARCHITECT, Publishers.

ARCHITECTURAL INSTRUCTION

BOSTON, MASS.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ARCHITECTURE.
Options in *Architectural Engineering* and *Landscape Architecture.*
College graduates and *draughtsmen* admitted as special students.
H. W. TYLER, Secretary,
Mass. Institute of Technology, Boston, Mass.

COLUMBUS, OHIO.

OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING
Offers four-year courses in *Architecture*, Civil, Electrical, Mechanical and Mining Engineering, and in Ceramics. Tuition free. For information address
President W. O. THOMPSON, Columbus, O.

ST. LOUIS, MO.

WASHINGTON UNIVERSITY
DEPARTMENT OF ARCHITECTURE
Offers a professional four-year course in Architecture. Admission by examination or by certificate or diploma from other schools and colleges. Draughtsmen are admitted as special students.

NEW YORK.

THE SOCIETY OF BEAUX-ARTS ARCHITECTS
has established
A FREE COURSE OF STUDY
open to draughtsmen and students of any city, modelled on the general plan pursued at the Ecole des Beaux-Arts in Paris, and comprising frequent problems in Orders, Design, Archeology, etc.
For information apply to the Secretary of the Committee on Education, 3 East 33d St., New York City.

CAMBRIDGE, MASS.

HARVARD UNIVERSITY
THE LAWRENCE SCIENTIFIC SCHOOL
offers four-year courses of study leading to the degree of S. B. in Civil, Mechanical and Electrical Engineering, Mining and Metallurgy, Architecture, Landscape Architecture, Forestry, Chemistry, Geology, Biology, Anatomy and Hygiene (preparation for medical schools). Science for Teachers, and a course in General Science. For the catalogue and information, address J. L. LOVE, 16 University Hall, Cambridge, Mass. N. S. SHALER, *Dean.*

PHILADELPHIA, PA.

UNIVERSITY OF PENNSYLVANIA
SCHOOL OF ARCHITECTURE
FOUR-YEAR COURSE. (Degree *B. S. in Arch.*) (Architectural engineering may be taken in lieu of advanced design, etc.)
GRADUATE YEAR. (Degree *M. S. in Arch.*) (Allowing specialization in design or in architectural engineering, etc.)
SPECIAL COURSE OF TWO YEARS. (*Certificate.*) (For qualified draughtsmen; affording option in architectural engineering.)
COMBINED COURSES IN ARTS AND ARCHITECTURE by which *A. B.* and *B. S. in Arch.* may be taken in six years.
COLLEGE GRADUATES granted advanced standing.
SUMMER COURSES in elementary and general subjects through which advanced standing in the Four Year Course may be secured.
For full information address: DR. J. H. PENNIMAN, Dean, College Hall, University of Pennsylvania, Philadelphia, Pa.

Cathedral of St. John the Divine
NEW YORK, N. Y.
Illustrations of the competitive designs for the great Protestant Episcopal Cathedral, now building on Bloomingdale Heights, New York.
In all, fifty-seven plates [loose] 14 x 20 inches, printed on plate paper. PRICE, $2.50 Per Set.
THE AMERICAN ARCHITECT, - - - New York and Boston

A PERFECT RUBBED FINISH
can be obtained only by using varnish made from gums hard enough to stand rubbing. Dull glass or polished surfaces can always be obtained by using
I.X.L. Preservative Coatings
Write for Varnish information
Edward Smith & Co., Varnish Makers & Color Grinders
45 Broadway, New York 59 Market St., Chicago

"Renaissance Fireplaces"
40 Gelatine Plates, on bond paper, 9" x 11".
In Envelope, Price $5.00.
THE AMERICAN ARCHITECT, Publishers.

THE ROBERT C. FISHER COMPANY
Successors to Fisher & Bird
MARBLE & GRANITE WORKS
139th-140th Sts.:—Locust Ave. and East River
Established 1830. NEW YORK

"Classik" BERGER'S METAL CEILINGS

Our Trade Mark

The word "Classik," used in connection with Berger Metal Ceilings, specifies the best metal ceilings in the world. Some metal ceilings are advertised *Classic*, but they are not Berger Ceilings. Our "Classik" Metal Ceilings were exclusively honored and awarded the gold medal at St. Louis.

Berger "Classik" Metal Ceilings

were originated and are only made by this company. We classified metal ceilings according to architectural style or renaissance, and "Classik" Metal Ceilings are the only ones true to those styles, and the so-called *Classic* ceilings are not Berger "Classik" Metal Ceilings.

Ask for Booklet 2C.

The Berger Manufacturing Company

CANTON, OHIO

Largest Metal Ceiling Makers in the World.

"Classik" BERGER'S METAL CEILINGS

FOR INFORMATION ABOUT

U. S. MAIL CHUTES

Which are a necessity in Office Buildings and Hotels, write to the sole makers

THE CUTLER MFG. COMPANY

ROCHESTER, N. Y.

PATENTED AUTHORIZED

"La Construction Moderne"

A journal of whose merits our readers have had opportunity to judge because of our frequent reference to it and our occasional republication of lesigns that are published in it, is the most complete and most interesting of the French architectural journals.

The seventeenth annual volume is now in course of publication.

Subscription, including postage, 35 francs.

Each weekly issue contains, besides the illustrations included in the text, two full-page plates, which by themeselves are worth double the amount of the annual subscription.

PRICE OF BACK ANNUAL VOLUMES

40 FRANCS

Address for subscriptions and catalogues

Librairie de la Construction Moderne

13 Rue Bonaparte, Paris, France

METAL TILING For WALLS AND CEILINGS

ENAMETILE

A PERFECT SUBSTITUTE FOR CERAMIC TILE

NEW YORK METAL CEILING Co

541 WEST 24th ST. N.Y.

FOR ALL CLASSES OF BUILDINGS

STEEL CEILINGS

SEND FOR CATALOGUE AND PRICES

TAPESTROLEA BEST FOR ALL WALLS

Artistic in color and finish. Easily put on. All grades, plain, colored or decorated. Prepared Canvases and Muslin. Send for TAPESTROLEA booklet and sample books.

RICHTER MFG. CO. 2 Franklin Ave., Tenafly, N. J. BURLAPS

"THE LIBRARY OF CONGRESS"

20 Plates, folio. Price, $5.00.

The American Architect, Publishers, New York and Boston.

OKONITE

Are pronounced by leading Architects to be SAFE, DURABLE and EASILY ADJUSTED for the inside wiring of PUBLIC and PRIVATE BUILDINGS.

Willard L. Candee, H. Durant Cheever, Geo. T. Manson, Managers. W. H. Hodgins, Sec'y.

INSULATED ELECTRIC LIGHT WIRES

OKONITE TRADE MARK

Candee Weatherproof Wires

Okonite Waterproof Tape

Manson Protecting Tape

SOLE MANUFACTURERS

THE OKONITE CO., Ltd.

253 Broadway, New York

SOCIETIES

AMERICAN INSTITUTE OF ARCHITECTS.

The following named gentlemen were elected officers for the ensuing year, at the Washington Convention:

President.—William S. Eames, St. Louis, Mo.

First Vice-President.—Alfred Stone, Providence, R. I.

Secretary and Treasurer.—Glenn Brown, "The Octagon," Washington, D. C.

Directors (to fill vacancies).—Frank Miles Day, Philadelphia, Pa.; J. M. Donaldson, Detroit, Mich.; William A. Boring, New York, N. Y.

Auditors.—Robert Stead and J. G. Hill, Washington, D. C.

BOSTON SOCIETY OF ARCHITECTS.

At the Annual Meeting of the Society the following officers were elected for the ensuing year:

President.—J. Randolph Coolidge, Jr.

Vice-President.—R. Clipston Sturgis.

Secretary.—Clarence H. Blackall, 20 Beacon street.

Treasurer.—Charles K. Cummings.

Executive Committee.—The foregoing, *ex officio*, and Francis R. Allen, Henry F. Bigeloe, Ralph Adams Cram, Alex. S. Jenney and Charles D. Maginnis.

MILWAUKEE ARCHITECTURAL CLUB.

The officers recently elected for the current year are:

President.—Cornelius Seenhonts.

Vice-President.—H. W. Buemming.

Secretary.—E. O. Kneugh.

Treasurer.—H. J. Rotier.

Directors.—H. P. Schmezke, G. B. Ferry and T. L. Rose.

AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS.

The following gentlemen were elected to office at the recent Annual Meeting of the Society:

President.—John C. Olmsted, Brookline, Mass.

Vice-President—Samuel Parsons, Jr., New York, N. Y.

Secretary.—Downing Vaux, New York, N. Y.

Treasurer.—C. N. Lowrie, New York, N. Y.

A CANAL WITH A HISTORY.

With the sale of the Chesapeake & Ohio Canal there passes one of the most remarkable monuments of the enterprise and public spirit of the State in its early manhood. There were two of these great public improvements, both of which were largely indebted to Maryland for their construction, and one of the causes of the canal's failure was that the railroad paralleled it. This competition had greatly circumscribed the trade of the canal before the Civil War, and heavy burdens had in consequence accumulated. But there have been instances of such parallels without the destruction of the waterway. The Erie Canal has been paralleled by a number of railways, and it is still a great artery of commerce.

The main reason for the collapse of the enterprise will probably be found by the historian to have been its usefulness in politics. It became the shuttlecock of conflicting railroads, a weapon to be wielded in the one case, or to be sheathed in "innocuous desuetude" in the other. In the old political battles which followed the war, if one road could influence it, the canal was made to do its level best as a rival to the other, whereas if the latter's political influence prevailed, the canal got only the business its rival could not carry, and languished. There was a period in the early '70's when, under the management of one who subsequently became a distinguished railroad magnate, the canal was actually made to pay, and for a brief season great expectations were entertained; but politics prevailed over business principles, and the canal went steadily down hill to its doom. It does not, however, detract from the enterprise and enlightenment of the early citizens of Maryland, nor from the wisdom of Maryland statesmen of those days. The Chesapeake & Ohio was a colossal work at that time, and it probably justified all the money spent on it by opening up territory and inspiring other works of a similar nature. Many millions were sunk in it, apparently, but who shall say how many millions it brought into exist-

NATIONAL FIRE-PROOFING CO.

PITTSBURGH NEW YORK BOSTON
PHILADELPHIA CHICAGO BALTIMORE

We own patents for the Johnson System of Fire-proofing. Residences and other buildings can be made fire-proof without the use of steel. Let us give you estimates.

Conservatories, Greenhouses, Vineries, Etc.

Designed, erected and heated. Catalogue, also special plans and estimates, on application.
LORD & BURNHAM CO.,
1133 Broadway, New York City

James A. Miller & Bro.
133 South Clinton Street, Chicago, Ill.
MANUFACTURERS
Fire Retarding Wire Glass Windows
Sheet Metal Frames and Sash
Skylights, Tile, Slate and Metal Roofing

80-Paged Illustrated Catalogue of over 250 Designs of Superior
WEATHER VANES, TOWER ORNAMENTS, CHURCH CROSSES, FINIALS, Etc., Etc.
Mailed to any address for 2-cent stamp—half the postage.
T. W. JONES, Manufacturer,
22 Burling Slip & 180 Front St., N.Y.

MINERAL WOOL
FIRE, SOUND and VERMIN PROOF INSULATOR.
Samples and Circulars Free.
U. S. Mineral Wool Co., 143 Liberty Street, NEW YORK.

The GOERZ LENS is the fastest Lens in the World.
That's a challenge and a fact demonstrated beyond dispute.
Anastigmatic *Accurate* *Guaranteed*
Though some lenses possess larger relative opening, actual practice demonstrates that
The GOERZ LENS is the fastest
None "Just as good."
For prices, circulars, etc., apply to your dealer or
C. P. Goerz Optical Works, Room , 52 E. Union Sq., N.Y.

ESTABLISHED 1868
THE "HAYES"
METALLIC GLAZED STRUCTURES
SKYLIGHTS FIRE PROOF WIRE-GLASS WINDOWS
71-8TH AVE. NEW YORK.
·METAL LATHINGS ETC·

ence. There were some fights over the canal which were not sordid political squabbles, but conflicts in which the manhood and honesty of the people were at stake, and there were men at the helm to guide the State safely through the ordeal. There is a great deal of history in the Chesapeake & Ohio Canal.—*Baltimore American.*

FRUIT TREES ALONG THE HIGHWAY.—One of the ways for beautifying the country in the Grand Duchy of Baden without any ultimate expense to the taxpayer is the planting of fruit trees along the Government highways. These are cherry, apple, pear, and in some places walnut trees. The trees are planted 32 feet apart along each side of the road, and when the fruit is ready for market it is sold at public auction on the trees, the purchaser being obliged to harvest it at his own expense. The amount realized from the sale of the fruit is applied toward the maintenance of the system—the propagation of young trees, their planting and cultivation, etc.

The department of the Government managing the enterprise is known as the department of "Wasser und Strassenbau." There are two large nurseries, one near Emmendingen and one near Durlach, where the trees are grown. The total amount realized from the sale of the fruit in 1902 was 38,046 marks, or $9,055; in 1903, 24,081 marks, or $5,731. These were not such good fruit years as the present one, but the amount realized this year has not been reported. The cost of maintaining the system in 1902 was $4,590, and in 1903, $4,980. The price realized for apples was 1 1-6 cents a pound, for pears 2 1-5, and for cherries 2 2-5 cents per pound.—*Joseph I. Brittain, United States Consul, Kehl, Baden.*

BUILDING NEWS.

(The editors greatly desire to receive information from the smaller and outlying towns as well as from the larger cities.)

ANNISTON, ALA.—The Supervising Architect, Washington, D. C., will receive proposals, until Feb. 25, for low-pressure steam heating apparatus for the U. S. Post Office, as advertised in THE AMERICAN ARCHITECT.

BALTIMORE, MD.—It is reported that the plans prepared by Simonson & Pretsch for the wholesale Fish Market have been accepted. This building, it is estimated, will cost about $100,000.

The Commission in charge of this work has also authorized this firm of architects to prepare plans for the proposed wholesale Produce Market.

CAMBRIDGE, O.—A $40,000 business building will be erected by the Eldridge-Higgins Wholesale Grocery Co.

CHICAGO, ILL.—Local papers state that Dr. E. G. Beck will shortly begin the erection of an $80,000 hospital building on the site at 1222 N. Clark St., recently purchased.

The County Board, it is said, is considering the erection of a new county building at a cost of $3,000,000. The question of a special bond issue for this purpose will be voted on at next Fall's election.

CHICAGO, ILL.—Trade papers state that Huehl & Schmid, 163 Randolph St., have designed an apartment house to be built on Barry Ave. near N. Clark St. at a cost of $80,000.

H. H. Waterman, 218 La Salle St., is the architect for an apartment building to be built at 55th St. and Ellis Ave., at a cost of $100,000.

CINCINNATI, O.—The Queen & Crescent Route will erect two new freight warehouses of concrete and brick at an estimated cost of $250,000. Plans have been completed by G. B. Nicholson, chief engineer.

We learn through an exchange that a 12-story building will be erected on 4th, Elm and McFarland Sts. C. S. Harrison, First National Bank building, is interested.

Boll & Taylor, 4th and Walnut Sts., have prepared plans for a 5-story building for S. T. Nelson & Co., at 4th and Elm Sts.

DES MOINES, IA.—It is reported locally that the Iowa National Bank will erect a new fireproof bank and office building on

Topical Architecture Library

Bound in Red Buckram, Gilt Top
10″ x 14″

GRILLES (Door and Window)
104 full-page plates . . . $7.50

DOORWAYS (Renaissance)
104 full-page plates . . . $7.50

DOMES (Ecclesiastical)
84 full page plates . . . $5.00

In Press
PULPITS, FONTS AND ORGAN
Cases $5.00

The American Architect, Publishers
Times Building, New York

It should be a pleasant thing for an architect to be associated with a tin of such high-grade quality and such old, aristocratic lineage as "Taylor Old Style" which has been made just as good as it is to-day for over seventy years.

N. & G. TAYLOR COMPANY
ESTABLISHED 1810
Philadelphia

the property purchased at 6th and Locust Sts.

Plans have been prepared by Hallett & Rawson, architects, 615 Walnut St., for the Golf and Country Club's new clubhouse to cost about $50,000.

Fresno, Cal.—It is reported that preliminary steps have been taken by the City Council toward the erection of additional city buildings at a cost of $20,000, on the site of the old City Hall. The question is to be submitted to the taxpayers at the Spring election.

Indianapolis, Ind.—A press despatch states that the Legislature has reported favorably on the $315,000 appropriation for the erection of a new Deaf and Dumb Institute building.

Iowa City, Ia.—The plans of Proudfoot & Bird, architects, Des Moines, for the new engineering building of the University of Iowa, have been approved by the Board of Regents, and work will be started this Summer. The structure will be three stories high, of brick and stone, and the first section to be built will cost about $50,000. Bids will be asked for at once.

The Masonic Lodge of Iowa City plans to erect a building at an early date, costing $45,000. The secretary can give further information.

Kansas City, Mo.—Two new schools are to be built after plans by C. A. Smith, architect, N. Y. Life building, one at 11th and Holmes Sts., to cost $75,000, and the other at 19th and Woodland Sts., to cost $35,000.

Geo. Carman, Hall building, has finished plans for brick apartments at Linwood Boulevard and Troost Ave., to cast $45,000. A. E. Mosier, owner.

Matt O'Connell, New Ridge building, is drawing plans for an 11-story office building to be erected by E. T. Orear, Dwight building, and associates. It will be 31 x 142 ft., of reinforced concrete construction, equipped with electric lights, steam heat, elevators and will cost $175,000.

Kansas City, Mo.—It is stated that the Sisters of St. Mary have completed plans for a $70,000 hospital to be erected at 28th and Main Sts.

New York City.— We learn that it is proposed to make a further addition to the Metropolitan Museum of Art. A bill has passed the Senate authorizing the appropriation of $1,250,000 of corporate stock to meet the expense. The contemplated addition is a wing to the Fifth Ave. side 350 feet long.

New York City.—The contract for the proposed new Altman building on Fifth Ave. between 34th and 35th Sts., and of which Messrs. Trowbridge & Livingston, of 424 Fifth Ave. are architects, has been secured, it is reported, by Marc Eidlitz & Son.

The Yorkville National Bank, Third Ave. and 85th St., it is stated, will erect a new building at a cost of $125,000. Robt. Maynicke, of 298 Fifth Ave., is the architect.

Philadelphia, Pa.—The Supervising Architect, Washington, D. C., will receive bids until Feb. 16 for the construction of a lookout gallery at the U. S. Post Office building, as advertised in The American Architect.

Philadelphia, Pa.—Local papers state that the trustees of the Free Library have commissioned Field & Medary, architects, to prepare plans for a branch library at 17th and Spring Garden Sts.

Pittsburgh, Pa.—Burnham & Co., architects, have plans under way for a 14-story office building for the Henry W. Oliver estate on Smithfield St. The property is 216 x 60 ft. Work will start as early as the weather will permit.

Hartje Bros. will make their new warehouse at Wood St. and First Ave. a 12-story structure instead of 10 stories as originally planned. Chas. Bickel, architect, will revise plans at once; the present structures are being razed; the site is 71 x 81 ft.

We learn that the plans for the new Carnegie technical schools in this city have been finished. The various buildings comprising this institution will occupy 32 acres, and together with all equippages and appliances, will cost nearly $25,000,000. Work on the first group will begin in the Spring. Palmer & Hornbostel, 61 William St., New York, are the architects.

Pittsburgh, Pa.—The contract for the new passenger station of the Pennsylvania R. R., at East Liberty, has been let to Roydhouse, Arey & Co., Philadelphia, for the station proper, and to the Columbia Construction Co. for the grading, driveways and walks. The total cost will be about $300,000.

Savannah, Ga.—The Supervising Architect, Washington, D. C., will receive bids for the steam heating and ventilating of the U. S. Marine Hospital building, and also for the installation of a conduit and electric wiring system for the same building, both

One Quality Double the Life Four Colors
of Steel Work and Metal Surfaces
by Painting With
Dixon's Silica-Graphite Paint
Joseph Dixon Crucible Co., Jersey City, U. S. A.

BUTCHER'S
Boston Polish
Is the best finish made for FLOORS, Interior Woodwork and Furniture
Not brittle; will neither scratch nor deface, like shellac or varnish. Is not soft and sticky, like beeswax. Perfectly transparent, preserving the natural color and beauty of the wood. Without doubt the most economical and satisfactory POLISH known for HARDWOOD FLOORS.
For Sale by Dealers in Paints, Hardware and House Furnishings
Send for our FREE BOOKLET, telling of the many advantages of BUTCHER'S BOSTON POLISH.
THE BUTCHER POLISH CO., 356 Atlantic Avenue, Boston, Mass.
Our No. 3 Reviver is a superior finish for kitchen and piazza floors
Mention The American Architect and Building News.

FILTERS
FOR
Residences, Office Bldgs., Hotels, Hospitals
MADE IN ALL SIZES
THE CUMMINGS FILTER CO.
Lewis Building PITTSBURG, PA.

ESTABLISHED 1844
French's
Paints
and
Varnishes
Highest Standard Attainable
Write for Prices and Samples
Samuel H. French and Company
PHILADELPHIA

CRANE VALVES
ESTABLISHED 1855

Algonquin Red Paint
READY MIXED FOR USE.
The best paint on earth for roofs, bridges, fences, buildings, and iron and wood work generally.
ALGONQUIN RED SLATE CO.
WORCESTER, MASS.

as advertised in THE AMERICAN ARCHITECT.

SPRINGFIELD, O.—Fire Chief Samuel Hunter recommends to the Board of Public Safety the erection of a new hose and chemical house at Rice and Limestone Sts.

VAN WERT, O.—The Board of Education of this city will erect a 10-room school building at a cost of $30,000. It will be brick, modern throughout and heated with steam. The plans were made by Architect H. W. Wachter, 701 Nasby building, Toledo, O., and bids will be advertised for in a week or ten days. C. C. Clark, Van Wert, O., is clerk of the Board of Education.

Architect Thomas H. Pulford, 237 Michigan St., has plans in his office for a modern brick building to be erected by C. S. Ashley, owner of the Zenobia Theatre. The building will be built alongside the theatre building, and will contain a large banquet hall, aside from a lodge room for the Shriners. It will cost about $45,000, and be erected as soon as Spring opens.

Architect W. B. Hunt, 846 Spitzer building, has plans in his office for a flat building to be erected by A. Hull, for O. S. Brumback, a local attorney, at a cost of $25,000. It is to be built of pressed brick and be modern throughout.

The American Conduit Company has been incorporated by Louis Lane, 429 Nasby building, and others, and has announced its intention of erecting a manufacturing plant in this city at an expenditure of $25,000.

BALTIMORE, MD.—Competitive designs for the new building for the Maryland Institute at Lanvale St. and Mt. Royal Ave., must be submitted by March 15. The structure will be three stories, 140 x 115 ft. John M. Carter, 222 St. Paul St., is chairman of the building committee.

An apartment house and several residences will be erected by Elias A. Blackshere, 2542 Eutaw Place, on Madison Ave. and Brooks Lane. The property is 150 x 245 ft.

Plans will be prepared by Edward H. Glidden, architect, Wilson building, 301 North Charlesh St., for a 7 or 8-story apartment house for parties represented by Edward C. Carrington, 110 East Lexington St., to be located at Mt. Royal Ave. and Maryland Ave. It will be of brick, stone and steel construction, 121 x 150 ft., equipped in an up-to-date manner, with power elevators, and will cost $150,000.

A site, 111 x 217 ft., on Hope St., has been purchased by Henry E. Cook, 527 East Monument St., on which a number of dwelling houses will be put up.

Ten acres of land, located at Pennsylvania Ave. and Liberty Road, have been leased by the Knickerbocker Theatrical Co., Broadway and 38th St., New York. The property will be used as the site for an amusement park, including a theatre, dancing pavilion, carousels, railways and other amusement features. It is to be completed by May 28.

A building permit has been issued to the Johns Kopkins estate for the erection of a 5-story, 80 x 110 ft. building at Lombard and Light Sts., to cost $60,000.

The Baltimore & Ohio R. R. has selected the plans submitted by H. D. Hale and Parker & Thomas, of Baltimore, for its 13-story, 155 x 168 ft. office building to be erected on Charles and Baltimore Sts.

Gen. Thos. J. Shyrock, of the Police Board, is working for a new Central Police Station, for which an appropriation of $146,000 will be asked of the legislature.

The City Council will soon be called upon to act on an ordinance for providing for the erection of a municipal hospital.

BARABOO, WIS.—It is reported that plans prepared by A. C. Clas, of Milwaukee, for the proposed $100,000 Court House have been accepted.

BAYONNE, N. J.—Eugene Reilly, architect, has prepared plans for a 4-story brick building at 23d St. and Ave. D, for Max Goldweber, who is now prepared to receive figures.

BETHLEHEM, PA.—President McIlvain, of the Bethlehem Steel Co., has stated that a large sum of money, probably in the neighborhood of $5,000,000, will be spent on the enlarging of the plant this year.

BINGHAMTON, N. Y.—We learn that competitive plans are requested for a new Y. M. C. A. building to cost $100,000. All plans must be submitted by April 1 to E. B. Searles, secretary.

BOISE, IDAHO.—It is reported a contract has been let for the erection of the proposed Overland Block at 8th and Main Sts., at a cost of $77,400.

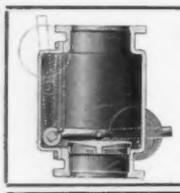
BOSTON, MASS.—We learn that the South Bay Wharf & Terminal Co., State St., is figuring on the erection of a mill and storage building, two stories high, of brick, 52 x 122 ft. on Atkinson St. Orr, Wight & Churchill, 101 Tremont St., Boston, are the architects.

BROOKLYN, N. Y.—The plans for the new building for the Brooklyn Society for the Prevention of Cruelty to Children, at 105 Schermerhorn St., have been completed and submitted by Montrose W. Morris, architect. The new structure will be five stories, 107 x 52 ft., and will cost about $50,000. Charles A. Schieren is president of the institution.

All Souls' Universalist Church has secured a site in Flatbush on which an edifice costing $20,000 will be built. L. Ward Brigham is pastor.

BIRMINGHAM, ALA.—The Crane Co. will

(Continued on page XII.)



Excelsior Straightway Back Pressure Valve

Thoroughly reliable when used as a back pressure valve, it is equally adapted for use as a relief of free exhaust valve for condensers, and we have supplied many for this purpose. By changing position of outside lever, it will work equally well in a vertical or horizontal position, or at any angle desired.

JENKINS BROS., New York, Boston, Philadelphia, Chicago, London.

WARREN'S TRINIDAD ASPHALT

ROOFING *"ANCHOR BRAND"* THE BEST MATERIAL FOR **PAVING**

WARREN CHEMICAL & MFG. CO. 17 Battery Place, NEW YORK

SOLID BRAIDED SASH CORD

Cotton Linen Hemp and Samson Spot Cord

We make them all and like to send samples.

SAMSON CORDAGE WORKS, Boston, Mass.

THE GEORGIAN PERIOD

in Twelve Portfolios

Price, $60

AN ILLUSTRATED DESCRIPTIVE CATALOGUE IS NOW BEING MADE

THE AMERICAN ARCHITECT

Publishers

Times Building NEW YORK

American Geographical Society Building, New York City. Howells & Stokes, Architects.

RICHEY, BROWNE & DONALD

IRON and BRONZE

MASPETH :: BOROUGH OF QUEENS :: NEW YORK CITY

ASPHALT FLOORS, ROOFS,

SIDEWALKS AND CARRIAGE-WAYS

Of Public Buildings, Hospitals, Warehouses, Stables, Cellars, Etc.

Laid with VAL de TRAVERS ROCK ASPHALT

Durable, Fireproof and Impervious. For estimates and list of works executed, apply to

The Neuchatel Asphalt Co., Limited

265 BROADWAY NEW YORK

"PARIETTE" READY ROOFING

(Needs no painting)

ASPHALT FLOORS

(9 years' record)

"Pioneer" Mineral Rubber Roofing Pitch

(9 years' record)

PURE ASPHALTS

For waterproofing, etc.

AMERICAN ASPHALTUM & RUBBER CO.

721-2-3 Woman's Temple, CHICAGO

"Gilsonite" J. S. Lamson & Bro., 77 Maiden Lane, NEW YORK

IRON DOOR AND WINDOW GRILLES

Bound in red cloth, gilt top.

104 Plates, each 10 x 14 inches.

PRICE $7.50

THE AMERICAN ARCHITECT PUBLISHERS

ORNAMENTAL

IRON and BRONZE

United States Foundry and Sales Company

South Norwalk

CONNECTICUT

Cathedral of St. John the Divine

New York, N. Y.

WE offer the illustrations of the competitive designs for the great Protestant Episcopal Cathedral, now building on Bloomingdale Heights, New York.

In all, fifty-seven plates [loose], 14 x 20 inches, printed on plate-paper.

PRICE, $2.50 per set

The American Architect

Publishers

Times Building: NEW YORK

The American Architect and Building News

VOL. LXXXVII. SATURDAY, FEBRUARY 11, 1905. No. 1520.

CONTENTS

SUMMARY: 41, 42
A Chance to Decide the Ownership of Drawings.—The Grand Jury Indicts Certain Promoters of the Chicago Subway.—The Value and Meaning of Words.—The English People Regret Losing Sir Caspar Purdon Clarke.—Suit for Commission for the Tomb of Leo XIII.—Death of Louis Ernest Barrias, Sculptor.—The Bearing of Railway Rates on Building Operations.—A Hoodooed Building and the Superstition of the Uneducated.
THE RELATION OF THE ENGINEER TO THE ARCHITECT . . . 43
THE RELATION OF SPECIALISTS TO ARCHITECTS 46
REPORT OF THE COMMITTEE ON EDUCATION, A. I. A. . . . 47
CHICAGO LETTER 49
STREET ARCHITECTURE—II. 51
ILLUSTRATIONS: 52
House at Ipswich, Mass.—House at Wellesley, Mass.—Hall of the National Geographical Society, Washington, D. C.—Chimneypiece, No. 115 East 69th St., New York, N. Y.—Danielson-Lincoln Memorial Library, Brimfield, Mass.: Two Plates.—House at North Andover, Mass.—Heinemann Picture-Gallery, Munich, Bavaria.
Additional: Detail of Central Doorway, St. Bartholomew's, New York, N. Y.—Detail of Left-hand Doorway, St. Bartholomew's, New York, N. Y.
NOTES AND CLIPPINGS. 52
SOCIETIES, ETC. IV

THERE seems to be at length a fair chance that the vexed question of the ownership of architectural drawings may be brought to final determination. Incited by certain favorable aspects of a recent case, Gibbon *vs.* Pease, the Royal Institute of British Architects, the Society of Architects and the Surveyors' Institution have, each and severally, appropriated a considerable sum so that competent counsel may be employed to take up the case and carry it through all the courts and before the House of Lords, if needful, in the hope that, at last, the decision in the noted case Ebdy *vs.* McGowan may be overthrown, and the courts at length be made to see that ever since that decision was given in the Court of Exchequer, in 1870, they have been treating all such cases in altogether too cavalier a fashion. As Ebdy *vs.* McGowan is cited in American cases of the kind, it would be quite worth while for the American Institute of Architects to inquire whether the three bodies named above would not allow it, also, to contribute some of the sinews of war. But as the fight may be a long one and as litigation is costly for defendant and plaintiff alike, it seems just possible that the defendant may offer, and the court force the acceptance of, some compromise before the case reaches the highest court. In such case, perhaps, for the sake of obtaining definite adjudication, it might be well for American money to be used in replenishing the defendant's account.

IN more than one noted case, what has proved ultimately to be an important public improvement would, possibly, never have been carried out, if some one had not had the audacity to overstep the law. In this class historians are not unlikely to place the building of the Panama Canal under American auspices. Sometimes the audacious and strenuous promoter has to set out rapidly for parts unknown, as "Boss" Shepard did some years ago, although now his memory is held in honor at Washington as one of the citizens to whom the community owes much gratitude. At other times the law succeeds in interfering before flight becomes even possibly advisable, and this seems to be the situation in the case of the promoters of the Chicago subway system, the important piece of engineering of which our Chicago correspondent gives some interesting details elsewhere in this issue. The President of the Chicago Tunnel Company and four other persons who, five years ago, held some official position under the city government were last week indicted by the Grand Jury for forgery and perjury, in that they caused a certain report on the Chicago tunnel system to be printed as having been "approved" by the City Council, whereas those who have now procured the indictments allege it was only ordered to be "placed on file." As one of the indicted men was the City Printer, it is easy to understand how a forgery of the kind charged might have been carried out.

THE legal and what may be called the etymological history of the undertaking seems, if we apprehend the situation, to have been quite as devious and mole-like as the actual engineering operations themselves. In 1899, the promoters, in the guise of the Illinois Telephone and Tunnel Company, procured a charter and permit, which empowered them to build a "conduit system" for the stringing of telephone and other electric wires, and the conveyance of mail-matter and packages—presumably by pneumatic pressure. The expansion of a "conduit" system, such as the grantors probably had in mind, into a system of tunnels twelve feet wide and fourteen feet high, through which all the freight of the city should finally be hauled is a species of inflation that could hardly have taken place except in the windy city. Of course by strict interpretation and derivation a tunnel is a conduit, but the incident suggests that there might be fewer loosely worded laws passed if there were more dictionaries and fewer sheep-bound law books in legislative chambers.

IF Sir Caspar Purdon Clarke has the make-up of the average human being, he is probably rather pleased just now that his approaching departure from London has given him the chance of reading the many very pleasant things that the informed newspapers and periodicals have been saying about him and his administration of the South Kensington Museum. And, as these pleasant things seem to be said with obvious sincerity, it becomes all the more agreeably apparent that the Metropolitan Museum has been more than usually fortunate in securing as its new Director a man whose abandonment of a similar post in a greater institution is so genuinely re-

Entered at the Post Office at New York as second-class matter.
Copyright, 1905, by THE AMERICAN ARCHITECT.

gretted. The general belief on the other side seems to be that, although Sir Caspar's new salary and retiring pension are understood to be at least double those which his place at South Kensington assured him, he nevertheless would never have deserted London but for the fact that he has not had at the Museum the free hand he felt he was entitled to. The fact is that South Kensington is under the control of the Science and Art Department, and the nominal head of the institution has been much thwarted and fettered by the red-tape bonds of his official, but unintelligent, superiors.

IT is not fair, perhaps, to say that of all classes of society the one least acceptable to architects as clients is made up of clergymen, but it may safely be said that there is no class which will so unblushingly do, through sheer unworldly ignorance of proper business fair-dealing, so many things that look like bits of sharp practice. It is probable, too, that a greater number of lawsuits grow out of the building of ecclesiastical structures of one kind or another than are generated by any other kind of building operation. The fact that this same belief, that the cloth may do what fustian may not do, seems to affect the princes of the Church as thoroughly as the lowliest dissenting parson is shown by a recent occurrence in Rome. It appears that it is the custom for the tomb of a deceased Pontiff to be erected at the expense of the cardinals created by him during his reign. Leo XIII had indicated his preference for being buried in St. John Lateran, so that his monument might balance at one side of the high-altar the monument he had erected to Pope Innocent III. A commission of cardinals was appointed, who finally vested the control and direction of the whole matter in the hands of Cardinal Satolli, well-known in this country, because he had special charge of the basilica. Thus empowered, Monsignor Satolli made arrangements with a sculptor, Professor Luzzi, to prepare the design. This was made, submitted to Pius X for approval and, the alterations suggested by him having been incorporated in it, a contract was entered into with the sculptor, who at once began the execution of his task. At this point Cardinal Satolli was called to America, and during his absence the commission of the College of Cardinals, finding that six thousand dollars could be saved if the work were to be placed in the hands of Professor Tadolini, accordingly abrogated the contract with the unfortunate Luzzi, who is now forced to sue the College of Cardinals for civil damages. These he will probably secure, for the Pope is said to be on his side; as well as the abstract equities of the case.

AS the work of Louis Ernest Barrias, who has just died in Paris, consisted largely of portrait statues and busts, it is not as well known to Americans as that of some others of his contemporaries. Probably, because of its position in the Garden of the Tuileries, his "Oath of Spartacus" is as well known as any composed work of his. But his "First Funeral—Adam and Eve carrying the body of Abel," shown in plaster at the Salon of 1878, is well known, as also are his "Song" and "Music" that adorn the grand staircase of the Hôtel de Ville, Paris; while it is not unlikely that his fame may come to rest largely on his fine figure of Joan of Arc, at Rouen, one of his later works. M. Barrias was born in 1841 and won the Prix de Rome when twenty-four years of age, having already won the Second Grand Prix four years earlier.

IT is unfortunate that on the verge of what promises to be a very active building season there should occur anything which tends to shake the confidence of investors in and improvers of real estate, either in the stability of prices and general conditions, the probity of contractors or the reliability of laborers. Much undesirable perturbation is being caused by the effort being made at Washington to bring about a regulation of railroad traffic rates, a regulation made for the temporary advantage of the shippers without much consideration for the permanent and vested interests of the owners of the railroads. It happens that the ownership of a vast amount of railroad securities is vested in savings-banks, insurance companies and national banks, institutions, that is, which are in the habit daily of making building-loans, to large total amounts; it is easy to infer, then, that legislation that affects prejudicially the absolute value or the earning capacity of these securities, and by so doing diminishes the income of these institutions, cannot but compel them to be less ready, if still able, to make the building-loans on whose procurement almost all large building operations depend nowadays. Fortunately the great money-lending institutions are awake to the situation, and are lending their aid to the railroads in their contention against hasty and unwise legislation of too sweeping a character.

IT is a very common occurrence that, whenever there has been a fatal accident during building operations, the whole working-force should knock-off work for the remainder of the day—at whose expense, we do not just know. This action is partly due to an innate impulse of decency and partly to the promptings of superstition. The obscure psychic influences of superstitious belief are so generally felt and acknowledged that many can sympathize with the men at work on the building of the Columbus Savings and Trust Co., at Columbus, O., who, on the occurrence of the twenty-first accident, declared there was a "hoodoo" on the structure, and they would no longer work there. The most curious case of yielding to superstition occurred on the old wooden sailing frigate which carried the United States exhibits to the Vienna Exposition. Returning home light in ballast, heavy seas were encountered one day, and owing to the rolling and pitching a heavy ice-box on the deck broke adrift and threatened to do much damage as it careered about over the deck. As a portion of the watch was trying to secure the slippery mass, it caught one of the men between itself and the bulwarks and crushed him to a pulp. As soon as the watch understood that Death had boarded the ship every man Jack of them skulked below, even the man at the wheel disappearing, so that the officers themselves had to brace up the yards so as to prevent serious disaster. This impulsive yielding to superstition took place in spite of the discipline that prevails on an American man-of-war.

THE RELATION OF THE ENGINEER TO THE ARCHITECT.*

THE advent of the rolled beam has brought a new era in architecture. This era is contemporaneous with our own work, it is being evolved in our own times; and we have not yet adjusted ourselves to it, not even we here in America. This does not mean that there were no structural problems before our day, but rather that the use of steel has brought with it structural possibilities indefinitely greater than anything that preceded, so that it practically constitutes a new age in building construction. Many of the great designers of the Middle Ages must also have been great engineers. Their command of geometric functions may have been as great as ours. From a structural standpoint, their work will always remain notable—some of it remarkable—and the new era does not signify that we know more than they did, but that we now have a material for our buildings that admits of forms of construction of which those masters could not have dreamed.

The characteristic features of this new era are: the substitution of the steel frame for the heavy masonry walls of massive construction, great height of buildings, larger openings in walls, wider spans in rooms, magnified requirements for ventilation and sanitation, electric light and power, the modern elevator, and the great multiplicity of structural and mechanical problems which these things involve. These characteristics do not pertain directly to the utility of the buildings nor to its artistic treatment, but to structural conditions involving technical education and experience. This is true, though the increased height of buildings and the great openings in exterior walls may call for a modification in the artistic treatment, and though the problems of utility may have been almost immeasurably magnified.

This new era, with its new conditions, partially explains why the engineer has suddenly, as it were, become a distinct factor in the building problem. It is because of this enormous expansion of problems involving technical knowledge. The other reason is not far to find: it is because the methods of treating these problems have been elaborated during the last century, and particularly during the last thirty years, upon a basis which affords much more accurate and more definite results than anything, so far as we know, in use before the present time.

While some of the vaulted ceilings and domes of the old world make men wonder how the designers calculated so closely and did their work so well, it is undoubtedly true that a large part of even the best buildings constructed prior to the advent of steel, were dimensioned and fixed structurally upon the basis of experience and precedent. Every new building called for careful comparisons and the judgment of the most experienced persons. The actual calculation of stresses and strains was unknown. Now this is changed. The rule is the other way in every up-to-date architect's office. The dimensions and sizes of all details of construction, as well as the mechanical features of a modern building are calculated, accurate and definite results are sought, and we pay less and less heed to what the dimensions and sizes of the same details were, in comparison, in other buildings. We lean on our computations, and not on precedent. Judgment is not eliminated, but in a large measure it is transferred, and the experience required is the experience of the technical man rather than that of the observer.

To put it briefly, structural and mechanical problems in building work were comparatively few in number in all times preceding the advent of rolled beams, while accurate and definite methods of treating such problems, particularly those involving the strength of materials were at least relatively crude and unsatisfactory and electrical problems were entirely unknown. In these days such problems fairly burden every design, and they are susceptible of definite calculation and accurate determination. Unless we get this point of view, we shall scarcely be able to appreciate what an evolution is really going on at the present time in the relation of the architect to his work and in the operations of his office, or to realize that these changing processes are not yet completed. Attention is called to this, in the beginning, because we can not determine what relation the engineer can most profitably hold to the building problem and to the architect, unless we approach the question with the largest possible conception of these new conditions which the construction of modern buildings has wrought in architectural methods and requirements.

*A paper by Mr. C. T. Purdy read at the Thirty-eighth Annual Convention of the American Institute of Architects.

The engineering profession, as a profession, is comparatively a new thing. Compared with that of the architect, it is really in its infancy. The employment of architects, their work as designers, and their supervision of construction are fixed things the world over; their place in the business world, and even their standard rate of compensation is universally conceded. With an engineer it is entirely different; he has been struggling, particularly during the last generation, for an acknowledged place as a professional man, and for a like independence. This is really true in every department of engineering. The busines world in these latter years has finally come to recognize him as a man of some importance, but it still expects him to work on a salary, unless he is able by some means to maintain himself independently, and this seems to be as true of the man who builds a transcontinental railroad or tunnels a mountain as it is of the youngster that works over a draughting-board.

When it comes to the engineer working on architectural problems, the commentary is doubly true, for it is practically a new field for technical effort. The engineers taking up this work, and their number is constantly increasing, appreciate these conditions. We shall see during the next generation, however, that they are a strong body of men, also, that they are ambitious, and that they will unquestionably aspire to any authority or position which circumstances may open to them. It may, therefore, be confidently predicted that any practice by the architectural profession which fails to appreciate these men at their real worth, and the rapid development of the engineering profession as a whole, will, ultimately, come to naught. If a relation is ever established between the engineer and the architect, which will be conceded to be the proper one by both professions and by the public, we may fairly expect that relation to be one which will work for the advantage of all concerned—the architect, the engineer and the owner.

Ten years ago, when the writer moved his office to New York, he was told that there was no chance for an engineer in that city; that excepting a few who regularly employed engineers in their office-force, the architects depended upon one of three or four of the great iron manufacturers of New York for their steel designing, and that that arrangement was a fixed one in the architectural practice of the city. He was told that the custom was so thoroughly established that it could not be disturbed. His office was, nevertheless, started in the belief that such a custom would go to pieces of its own accord. In a very large degree this has already happened, and it is a fair illustration of what will eventually happen to every relation between men that is not reasonably considerate of all interests concerned.

The structural engineer ordinarily includes in his part of the work, the structural framework of the building, be it much or little, the foundations, and also the masonry whenever it becomes complicated or questions of strength are involved. This part of the designing of a building can be accomplished in several different ways:

1. The architect may do the work himself, without assistance.
2. The architect may have the work done by some manufacturer.
3. The architect may have the work done by the builder, or the owner, with his consent, may have it done in that way.
4. The architect may employ the engineer as a part of his own force.
5. The architect may associate the engineer with himself as a partner.
6. The architect may employ a consulting engineer, who has his own independent office and practice.
7. The architect may be associated with such an engineer, employed directly by the owner, without any personal arrangement with him in relation to the matter, or
8. The engineer may have control of all the work, with the architect more or less subordinated to him.

All of these methods of getting the work done are in vogue at the present time. Here is a wide divergence of practice and certainly a very undesirable condition of affairs. With engineers in other departments, particularly in electrical work and heating and ventilating the practice is more uniform, but not sufficiently so.

The responsibility rests chiefly with the architect. Where the work has been done by men in the employ of the manufacturer or builder, in many cases it has been so because they wanted it, and when they have been employed by the owners, it has usually been because the owners required it; but outside of these influences, the architects have been in control of the

work. They have decided how it should be done, and the engineer could do nothing but acquiesce in their wishes.

This wide divergence of action has, first of all, grown out of the varying conditions among the architects themselves. Some have technical training, and their best work pertains to the structural part of their problems, while others, and among them some of the best designers, have little or no taste for construction. Some architects can afford to give their own time to structural details, when it would be folly for others to do so. Some architects have a business sufficiently large to warrant the expense of regularly employing competent men in their own offices, while others cannot afford such an expense. In some cases the cost of the best technical assistance is unhesitatingly met by owners, while other work is done under circumstances which makes the employment of engineers almost prohibitive.

To some extent, this difference in practice has grown out of a fear of trusting to outside help. Some architects have been willing to try it, while others have not. The fear has been twofold, that the work would not be done well, and that the building could not be designed to advantage unless the work was all kept together. Sometimes it has been the former, sometimes the latter, and occasionally it has been a dread in both directions.

The divergence of practice is also due to a failure to appreciate good work. The great structures of our cities vary in strength and stability, and in every other structural characteristic, from the wretchedly poor to the wastefully good. The engineer is not to blame, he does the best he can; but *he* is to blame who chooses an inexperienced or incompetent man for important work. It is a fact that young men not long out of school and men whose technical knowledge is very limited are employed in offices to do work for which they could not be considered qualified in any of the leading engineers' offices of the country. They fail to do the wise thing. They can't help it. Sometimes the result is lacking in some essential feature, and sometimes it involves only the lesser evil of extravagance; but whether it is the one or the other, ordinarily, both the architect and the owner fail to realize its imperfections. It is only now and then, when such structures come under some extraordinary test, that the weakness becomes apparent.

There remains, however, another explanation of this divergence, a more important one perhaps than all the others put together, and that is the cost. Undoubtedly, this is often the reason why inexperienced or incompetent men are employed. The question is asked too often: "How can we get the work done at the least expense?" and there are not a few extreme cases on record where the architect has tried to employ a consulting engineer by taking bids to see who would do the work for the least money! The results produced by such means are, to say the least, very unsatisfactory, and words can hardly tell how discouraging and humiliating it is to the competent engineer who is trying to do good work.

Some of the ways in which structural designing is now being done ought to be ruled out altogether, and this is particularly true of the one already referred to as the common practice in New York ten years ago. The day is coming when no architect who values his reputation will venture to receive assistance from a manufacturer or his employés, whether that assistance is paid for in a regular way or not. It might also be added that the day is coming when no engineer regularly employed by a manufacturer, or practising as such himself, will expect to be called on for such services. It is an old saying that "No man can serve two masters," and it is because this is true that this relation, sooner or later, is certain to disappear: in many cases it works to the owner's distinct disadvantage.

The steel frames in some of the most notable buildings, both of the East and the West, have been designed by the builder or under his immediate direction. This is particularly true of some of the first high buildings. The builder's confidence in the practicability of the new methods of construction, and his willingness to share in the responsibility of their introduction, made that way of doing the work acceptable and pardonable when these first buildings were erected. The same method, however, has been followed on other important buildings during later years. Its continuance is partially due to the existence of the precedent and partially to the influence of the realty element which has recently taken so large a hold of the building business of the country. It is, however, an undesirable relation from the architect's point of view, and that is sufficient to forbid its general adoption.

The employment of engineers by an architect as a part of his own force is also open to at least two serious objections, particularly when it is done in an office of moderate size. The character of the work which is ordinarily produced under such circumstances is not likely to be of a high order. The other objection comes from the other point of view. The subordinate and limited character of the service ordinarily required in such cases is certain to be distasteful and not acceptable to the most competent engineers. For these two reasons it is a method that probably will not be permanently maintained. The structural and mechanical problems in any office, be it large or small, are likely at any time to require the services of men whose training and ability will compare favorably with that of the architect himself; or, to put it another way, these problems may at any time become the most important problems connected with the architect's business. The day is already dawning when the owner is going to appreciate this fact and is going to require the same ability and the same experience in those departments that he expects to get from his architect in other ways. When that day fully comes, this method of handling these problems, in all, except possibly the very largest offices, must disappear. Indeed, as rapidly as architects come to appreciate the importance of good structural designing, they will themselves be dissatisfied unless they can have the very best, and it will be almost impossible for them to get the best from a salaried man without a greater expense than they can afford. Even in the largest offices it will eventually prove difficult to keep the service up to a high standard without occasionally varying the practice or making changes in the personnel of the department. This is possible, because no man working under a salary will maintain as high a standard of efficiency as he would maintain if he were working for himself. There are few exceptions. It is human nature. Moreover, all men are prone to work in ruts and to repeat their faults. If an architect is constantly dependent upon one or two men in his own office, there is no getting out of these ruts or escaping from these faults, unless it be by occasionally changing the method of having the work done, or by changing the employés themselves. One of the leading engineers of the country, in speaking of this matter, recently said: "The consulting engineer, in general practice, may be expected not only to have better and more adequate facilities, in the way of technical assistants, for doing a given piece of work, but he can also bring to bear upon this work a much greater amount of experience and knowledge derived from the greater number and variety of cases handled through his office." He added: "I have had occasion to note several times the limited scope of the knowledge and experience of the technical assistants employed on salary by architects and contractors."

The employment of the engineer by the owner as the associate of the architect or the one in general charge of the work, is also undesirable; as an associate it divides responsibility; in charge of the work, it subordinates all other considerations to the structural. Eventually it would be humiliating to the architect. It does not conduce to the best interests of either the owner or the architect. Both arrangements are mistakes and neither can attain a general acceptance, in or out of professional circles.

On the other hand, consideration of such a plan cannot be turned away lightly. If some solution of this difficulty is not found, if some systematic effort is not made to "standardize" this relation, if such an expression may be used, the engineer will strive to push himself forward in just such ways as these, and will meet with encouragement from the public. The opportunity to take the lead appeals to his ambition. He is also almost always a practical man of affairs. On these accounts, if the situation is allowed to drift, it may never be possible to arrive at an understanding between the two professions for a uniform practice and a division of authority which may in time become fixed by public usage. And this is not an abstract theory. A good illustration of both arrangements has come to the writer's attention while these words are being written. In one case, the owner of a fifteen-story building employed the engineer to design the steel construction of the building without reference to the architects. In the other case, a power-house was designed by the engineers and no architect was employed until the services of one became absolutely necessary, and then only to serve in a subordinate relation.

Objections are also repeatedly made to the employment of a consulting engineer. It is urged that the dividing of the work is a disadvantage to the architect, and that it obstructs and delays the men employed in the architect's office on other features of the design. The desire to keep the work under personal control

is usually due to this notion; but sometimes it is due to a feeling of satisfaction in doing everything one's self, and occasionally it is born of the wish to monopolize the credit of every achievement with which one has to do. These ideas and desires prevail not only in the larger offices, where the volume of business is sufficient to warrant their gratification but architects having smaller practices are governed by the same ideas.

A much greater difficulty, however, is the question of compensation, to which reference has already been made. The expenditure of so large a part of the architect's commission in one sum always seems a hard thing to accept.

These difficulties, and these only, seem to stand in the way of the employment of a consulting engineer. To all other relations there seems to be an objection which makes them impossible, an objection which will surely prevent their final acceptance by all concerned. It might, therefore, be well to inquire particularly into these difficulties which appear to stand in the way of the employment of the consulting engineer who has a practice of his own independent of the architect. Are the objections insurmountable? Has the relation advantages of sufficient importance to warrant changing other methods which we are using in order to secure its adoption? Let us see?

The dividing of the work in the architect's office and the likelihood of delay growing out of doing so seems tangible enough to those who have believed in it, and who have had little or no experience to disprove the notion. I remember one case in which the owner arranged for an outside engineer to do the work, but the architects were so sure that it was an impossible arrangement that they spent some hundreds of dollars duplicating the work of the engineer, before they were convinced that it was unnecessary. As a matter of fact, the very opposite is true. The dividing of the work is more likely to give point and snap to the work remaining to be done in the architect's office, than otherwise. It is hard to make the doubting believe, but more than one member of this Institute has borne testimony to such an experience.

No consulting engineer can preserve his independence in business, unless he can find a way of doing his work with little or no trouble to his client and, also, unless he can do it quickly, making every figure and every line count in the final result. He cannot afford to have the work drag in his office, nor to speculate with uncertain data. He wants to get things settled. So does the architect; but the architect can be put off. The engineer, however, objects to doing work until things are settled. So decisions are hastened, and both the architect and the engineer get the benefit. Many times, also, the touch of the two offices with one another is like an infusion of new blood to the slower one. Sometimes it is incited to keep ahead of the engineer, just as a matter of rivalry; and at other times, it is to keep him informed regarding the general construction. This particular difficulty, therefore, can always be overcome, if the work is rightly managed.

The cost of the work, as already stated, has been the hardest difficulty to satisfactorily adjust. It has prevented the employment of the engineer more than anything else. If the cost of his services could always be obtained from the owner without encroachment upon the architect's regular fees, it would undoubtedly do much to simplify the problem. But the general acceptance of such an arrangement in the immediate future can hardly be hoped for. From all reports, it is often difficult to obtain the regular commission, and any charges in excess in such cases are impossible. If any general effort should be made by the architects or by the engineers, or by both professions co-operating, to definitely establish this relation between the two professions, and it was predicated upon the willingness of the public to pay the extra commission, the movement would probably come to nothing. The public are educated slowly and, for a good while at least, their willingness to pay the additional commission would be the exception. In the meantime, other influences are gathering headway, and these in turn, would probably prevent the success of such an effort in the more distant future. The conditions are such, it seems to the writer, that such an undertaking should be made, if at all, upon some basis which can be put in operation in comparatively short time, a basis which does not require the co-operation of the public. This does not mean that an extra commission from the owner is undesirable. It is desirable, and every effort, both of the architect and the engineer, should be put forth to secure it. It is probably a fact that the amount of work required of the architect in these days, in proportion to his income, is greater than it used to be, and that this additional compensation, if it may be called such, would not make the architect much, if any, better off than he would have been with the same amount of work a few years ago. It is also true that some owners have already paid this additional compensation, and that some others can be easily induced to pay it; yet, notwithstanding these points to the contrary, it is important that the success of the movement should not be dependent upon the willingness of the public to pay the extra commission.

It seems to the writer that the following points should be made with reference to this question of the engineer's compensation:

1. It should be paid by the architect.
2. It should be adequate.
3. An extra commission on account of this expense should be obtained from the owner, if possible.
4. The compensation should be a commission.
5. If an extra commission can be obtained from the owner, the engineer should get the benefit of it.
6. If the extra compensation cannot be obtained from the owner, the engineer should be content with a smaller commission.
7. The commission should be the same for all kinds of engineering pertaining to building work, structural as well as mechanical, and
8. The commission should cover only the work included in the service.

The engineer's compensation should be paid by the architect, because that is most in keeping with the subordinate relation of the engineer. It puts into the architect's hand, without friction and without question, the power to retain his management of the business.

The compensation should be adequate, otherwise the whole idea of establishing a permanent and satisfactory relation between the two professions will fall to pieces. The engineer will more and more assert himself, and he will not agree to any fixed relation unless it provides for a full and adequate compensation for his services.

If an additional commission is paid by the owner, the engineer should give something for it, otherwise it will be difficult to persuade the owner that the additional compensation is necessary. It is suggested that the engineer should assume the full responsibility of the architect in reference to his part of the work when he receives the full commission; that is, the full compensation which he should receive when an additional commission is obtained from the owner; and on the contrary, that he should not be held any more responsible than an employé of the architect's office if this full compensation is not paid. This will be to the advantage of both the architect and the owner. It will tend to prevent the employment of incompetent men as consulting engineers; it will encourage the employment of better employés in the engineer's office, and will promote better work in every way.

The engineer will undoubtedly be more careful with his work if he faces the possibility of losing his commission when it is not promptly done. Mathematical computations will be more perfectly checked, plans and specifications will be more thoroughly studied, and the placing of the responsibility on the engineer in a definite way cannot fail to bring about a better service. This is really the same argument that we are now presenting to the owner when we tell him that he can have an engineer's services, if he pays for them; for, under present conditions, the architect is bound to furnish the owner something in the way of technical work, whether an extra compensation is paid or not.

And this compensation should be a commission, though a number of the leading engineers of the country undoubtedly prefer a fixed sum. Many of the architects are also accustomed to paying a fixed sum instead of a commission; but notwithstanding these preferences, it is the writer's opinion that in all ordinary cases it should be a commission. If any arrangement is made to establish a definite and fixed relation between the two professions, it must unquestionably cover the problem of compensation, and that can be stated in the terms of a commission definitely, equitably and generally, while it cannot be stated in any general terms on the basis of a fixed sum. Moreover, such a plan can be carried out, and the adequate compensation of the engineer can be maintained in that way with the least friction. It also enables the architect to compare the amount he pays out with that which he receives, which he cannot readily do if the engineer's compensation is fixed in any other way.

In any case, the architect ought not to be obliged to pay out all that he receives. It is right that the engineer should be adequately paid, but it is also right that there should be a fair division. If it is worth while to undertake to establish a fixed relation between the two professions, which can be maintained whether the public falls into line or not, and the architect is to employ the engineer, whether he receives the extra commission or not, the engineer should be expected to serve in any case and to receive a less compensation if necessary.

In order to give point to this suggestion with reference to compensation, the writer would suggest the following rule to cover all ordinary work: Charge the owner 7½ per cent. commission for all technical work for which engineers are required. If the 7½ per cent. is obtained from the owner, pay the engineer 5 per cent. when superintendence is included in his services, and 3½ per cent. when it is not. If only 5 per cent. commission is obtained from the owner, pay the engineer 3½ per cent. when superintendence is included in his services and 2½ per cent. when it is not. The cost of the engineer's services for extraordinary work, under this rule, would have to be adjusted in each individual case, and the question of whether work was ordinary or not would have to be determined before the work was begun. The rates named in the rule would not be sufficient to cover all cases. Often the actual cost of designing the structural steel work for a theatre, without superintendence, is 5 per cent., or more.

Let us turn now to the other query:

"Has the relation advantages of sufficient importance to warrant changing other methods we have been using in order to secure its adoption?" It seems to the writer that it has. There are perhaps twenty-five or more engineers of large experience in the several departments of building construction, now in independent practice in different parts of the United States, and the most eminent and the most capable men in the world in these departments of work are to be found in this number. The monied interests of the country are awakening to a greater conception of the importance of good structural and mechanical designing, and more and more, in the future, they are going to require technical services of a high order. They will eventually force the situation. Unless some arrangement is made for co-operation, most of these engineers will, sooner or later, be employed by the interests that now employ the architects, and the more this is done the more difficult it is going to be to standardize the relation of architect and engineer. In this same connection it should not be forgotten that the schools of our country are turning out well-trained young men in the engineering profession, several thousand of them each year, a considerable part of whom are going into building work. An evolution is in progress. Shall we drift with the current, or shall we control it? It would seem to be better to fashion events and not let them fashion us. It would seem to be better to yield a little here and a little there of our individual preferences, in order to secure the common good. It would seem to be better, possibly, to sacrifice something at the present time, if thereby a reasonable relation between the two professions may be fixed and maintained.

In this day of the centralization of power and responsibility, the best interests of the owner are unquestionably subserved by making one man responsible, and only one. I confidently believe that no practice can become uniformly acceptable; no relations between architects and engineers can ever give satisfaction, that is not founded upon this fundamental idea—the centralization of responsibility in one man. If this is true, engineers should not hesitate to accept a position of subordinate service, for it may reasonably be contended that the architect is the one man that should be in this position of supreme control. Not only is precedent in his favor, but the character of his work and the wide range of its requirements especially fits him for this larger responsibility. In this new dispensation, whatever else he is, he must be a man of affairs in the architectural world, and the engineer cannot take that place of responsibility, however well qualified he may be for doing so, without subordinating his technical work to the larger demands of such management.

On the other hand, the architects should not fail to appreciate the changing conditions. They should not hestitate to meet the engineer half way. They want only reasonable profits for their labor, an undivided responsibility in their own departments, and the credit which is due to them for really worthy achievement. Less than this, they will not be content with.

The architect in full control of the planning and execution of every great architectural undertaking, retaining structural and mechanical engineers who have their own independent practice, and sharing with them the emoluments and the honors of their achievements; the engineer laboring independently within his own province, without limitations, except by the financial and architectural conditions of his problems, receiving adequate compensation while he maintains the position of the architect: such is the ideal relationship of architect and engineer, and particularly so if both individuals are broad-minded and reasonable, and over all, there be mutual sympathy.

Let us summarize the points we have made in relation to it:

1. It is open to no insurmountable objections.
2. The details of its operation can be arranged in all cases so as to offer no serious disadvantage.
3. It can be made to afford the engineer a regular and adequate compensation.
4. It conserves the best interests of all concerned, by fixing the responsibility and the managing control for each undertaking on one man.
5. It provides that the architect shall be that one man, and would undoubtedly perpetuate that arrangement.
6. It insures the best results, making it possible for any architect to avail himself of the best technical service the country affords, and
7. It enables the architect to place a definite responsibility for the technical work upon those whom he calls to his assistance.

Only one thing more remains to be said: Certain things must be done, if we would undertake to establish such a relation:

1. It must be deliberately worked for. It will not "come drifting."
2. It must be a co-operative effort.
3. It must be a general effort.
4. It must be undertaken in a spirit of compromise and goodwill.

If a committee were appointed by the American Institute of Architects to consider this matter and to confer with the engineers, the latter would undoubtedly find some acceptable way of meeting them. There is certainly a great deal of dissatisfaction with present conditions, and a number of the leading engineers have already expressed their wish that some action might be taken to put the relation of the architects and engineers upon a better basis. Any such effort will come to naught, however, unless it is undertaken in a spirit of compromise and good-will. There must be, on the part of the engineers, a willingness to take a subordinate part, and to support the architects in maintaining that relation, even though sometimes it may require an apparent sacrifice; and there must be, upon the part of the architects, a willingness to share in both their compensation and in the credit of their achievements.

THE RELATIONS OF SPECIALISTS TO ARCHITECTS.*

IN attempting to discuss the relations of specialists to architects, a difficulty at once presents itself in the varying factors of the professional equipment of the architect, the personal qualifications of both the architect and the specialist, as well as in the particular work which the specialist is called upon to do.

An architect of large and constant practice can afford to have complete or approximately complete provisions in his own office for every department of work covered by his practice. This is necessarily an expensive service to maintain, but the conditions are ideal for the execution of the best work. In such a case, the controlling head employs only such specialists as assistants as will do his bidding in their relatively subordinate places, or whose independent work can be relied upon to conform to the known traditions of the office. It is possible also that the designers in the more purely architectural departments be given a general oversight of the allied departments. Offices of this importance, however, are extremely few.

There is a second and larger class of offices, in which the conditions of American practice warrant the maintenance of a construction department, equal to handling the special as well as ordinary problems of steel-skeleton construction and heavy building, in addition to the necessary departments of design. The constructive engineer is generally capable of dealing with the mechanical problems of heating and ventilation, power-plants and electrical installations.

By far the largest class is obliged to have not only the problems

*A paper by Mr. Edgar V. Seeler, read at the Thirty-eighth Annual Convention of the American Institute of Architects.

of special construction and mechanical engineering solved by specialists employed temporarily, but, in common with the second class, also problems of sanitation, landscaping, interior decoration, models of ornament, and such other work as general practice implies. In this class, the smaller the practice, the greater is the difficulty of securing the assent of the client to the extra fee which the employment of the specialist necessitates, and, it may be added, the greater the difficulty of the architect in securing a satisfactory specialist.

With the growing importance of the specialist, the acknowledgment that he has come to be a necessity, emphasized by such statements as that in the "Schedule," which provides that his services are to be paid for "by the owner" in addition to the fee paid the architect, contains a germ of harm to the best interests of the architect, in so far as it encourages too great independence on the part of the specialist. For the prime requisite toward the ultimate success of any building is that the architect, either in person or by a responsible deputy, shall be in full control of every individual item which goes to make his building a complete whole.

It may be generally admitted that the engineering specialists are much more tractable as associates than those specialists whose work requires a more definite artistic sense. Capable engineers are numerous, and they have no sentiment of hurt pride in admitting that they know little of art.

It is also probably true, on the other hand, that the artist's distaste for engineering makes it easier for the engineer to accomplish his purpose, so that in designing, the architect is more willing to make concessions to the engineer, or to meet him half way, than if the engineer presumed beyond his true sphere. The architect comes to know after very little experience that heat-flues, steam-pipes, electric-conduits, plumbing lines, demand space for their proper operation, and he allows for them, even though vaguely.

Again, it must be remembered that the engineering expert, whatever his particular branch, is not always capable of determining just what is meant by plans, nor of seizing at once the particular object which the architect wishes to accomplish. If the engineer is lazy or set in his ways, he is prone not to devote any more time to such work than is actually necessary to accomplish his own results, irrespective of their artistic merits.

The architect, therefore (and it cannot be urged too strongly), must in self-defense exercise a close supervision over the work of the engineering expert. He will require tact and persistency, in order to get the most out of the ingenuity which the engineering expert frequently possesses. He must, in every case, have it definitely understood that no work in those departments is to be finally determined without reference to him for its ultimate effect in the sum total of his building.

The landscape architect, the interior decorator, the glass designer, being men in whom the artistic sense is indispensable, are perhaps the most difficult of all to control; the more so that their functions are in many ways as important as that of the architect himself. Fortunately, these experts are much less fractious now than they were ten years ago; but the lack in each is usually due to a misapprehension of the relation which his work should bear to the building of which it is an adjunct.

It is a pity to have to admit that many architects do not consider the setting of their buildings, or the treatment of interiors, as an integral part of their design. It is a greater pity that many architects are not qualified to determine such questions. For such architects little respect can be expected from the specialist. The architect is of no help to him, and is not sensitive enough to appreciate the work of the specialist. The incentive to the best effort is absent.

On the other hand, where an architect has mastered, if only in a general way, the principles of good design, where he has a clear conception of his completed work, he should have no difficulty in modestly but firmly impressing his convictions upon the specialist.

The term "landscape architect" is an anomaly. The chief service of the landscape artist—since it seems to be the only term available—is to apply his knowledge of planting, of the growth, form and color of vegetable life, to the details of the general scheme of grounds or setting which has been correlated to the building and developed in its architectural work by the architect himself. The landscape architect should not be called upon to determine whether gardens shall be sunken or raised; whether walls, balustrades, dials, and such accessories shall be of one mass and design or another, of one material or another; whether the formal garden shall be on this axis or that, or off axis altogether; to determine these things is the duty of the architect. The service of the landscape architect should mean advice in the choice of plants, in the relative value of trees, shrubbery and vines, in the planting of lawns and hedges, and in those items which are the result of special nature-study and intimate living with nature.

Regarding the interior decorator, there is no possible slaughter worse than that he can accomplish, and usually does accomplish, with an otherwise harmless if not entirely wholesome architectural interior. And with the interior decorator may almost be classed, in ruthless disregard of architectural principles, the artist of eminence to whom is entrusted the picture panels. Puvis de Chavannes is almost the only modern who has realized the dignity of his work, and it is an open question whether, in the one or two examples of his work which we have the good fortune to possess in America, he would not have changed his color scheme could he have seen its surroundings in advance.

Of designers in glass and mosaic, how many can be trusted undirected with a work of importance, without the risk of their introducing an irrelevant style or an inharmonious color note?

The only guaranty of the perfect working out of these various parts in the make-up of a building lies, first, in the education of the architect, whereby he himself is competent to conceive, to express and to execute, or to select from around him those who can do so; and, second, in the untiring supervision of his executants.

An interesting side of all this is that the intelligent specialist, whatever his work, is usually willing and desirous that general lines shall be laid down for him. He knows that his work gains in dignity, grows more interesting in variety, and helps more in the accomplishment of a unified result than would be possible under any other circumstanecs.

There is no reason in the world, other than deficiency of some sort on the part of the architect, why the architect and the specialist should not work side by side in entire harmony under the acknowledged leadership of the architect and the willing acquiescence of the specialist.

REPORT OF THE COMMITTEE ON EDUCATION, A. I. A.

THE Committee on Education submits the following brief statements of the architectural schools of the country, which continue to show increase in numbers.

The Department of Architecture of the Massachusetts Institute of Technology reports that the entering class is a third larger than last year, and that as many as fifteen graduates have remained for advanced work. An interesting feature is that the college graduate who enters the school is more desirous than hitherto of adding the Institute degree to the one he already possesses, or, if he prefer to rest as a "special," he does not limit himself, as he has commonly done heretofore, to the æsthetic side of his profession, but adds the necessary mathematics to his course in the interest of scientific construction.

It has been found that the courses at the Paris Ecole des Beaux-Arts are somewhat stiffer than at the Institute, if the student is to take his degree. This has had its good influence here, as shown by the above results. Another cause of the increased attention given to construction is undoubtedly the steadily increasing demand for engineering knowledge in all important work; but the fact remains that the association of construction and design has come to receive its proper recognition.

The Department of Architecture of the University of Illinois has in architecture, 62 students, and in architectural engineering, 31 students, making a total of 93. Usually, ten students graduate annually. The equipment of the department has been increased during the year by the addition of 1,500 lantern-slides, mostly of Italian subjects, making a total collection of about 6,000 slides; by the purchase of about 1,800 Italian photographs, including a large series on the Apulian monuments, and by the addition of architectural books costing several thousand dollars to the architectural library. Courses in design and practice of several art-industries have been added. The department has received a State appropriation of $7,500 for the extension of the equipment during the years 1903-5. Future prospects for the department and its graduates are very promising.

The Cornell University College of Architecture reports this year a gratifying increase in the number of students. It regrets to chronicle that Professor Van Pelt has retired, to follow Professor Trowbridge into architectural practice, but the College feels itself fortunate in being able at the same time to announce that Mr. Maurice Prevot has been elected to the Professorship in Design, while Professor Clarence A. Martin is advanced to the position of Professor in Charge. Professor Prevot, a graduate of the Paris Ecole des Beaux-Arts, is regarded as one of the

strongest of the later Beaux-Arts men, having won, among other distinctions, a silver medal at the Bordeaux Exposition and a First-Second prize in the Grand Prix de Rome. Professor Martin has been closely identified with the administrations of Professors Trowbridge and Van Pelt, and has worked thoroughly in sympathy with them in the building up of the new curriculum. It is expected, therefore, that the College of Architecture will continue along the lines already established.

The School of Architecture at Columbia University reports the number of students enrolled at the beginning of the year as 78, of whom 35 are regular undergraduates, 15 specials, 4 students from other parts of the University pursuing partial courses, and 4 are post-graduate students, candidates for higher degrees. This registration is somewhat below that of last year.

In reply to and by way of comment upon suggestions received from twelve New York architects upon the invitation of the trustees, and by them referred to the Acting Head and Staff of the School, a comprehensive report upon the reorganization of the curriculum and changes in the methods of the school was made to the trustees in March. This report is still under consideration by the Board, and until they take action upon it, probably in November, it will, of course, be impossible to give out the substance of the changes recommended. So far as could be done without the action of the Board, the courses and methods of the school have been already modified in the direction of greater emphasis upon freehand drawing and design, and upon the professional relations of the school. The division of the course into "years" or year-classes is being gradually done away with, together with the tradition that a student must graduate four years after entering, and is to be blamed or pitied if he fails to do so. The "Announcement" or Bulletin of the school states that the course is "of indeterminate length." A student graduates when he has done all the work required in a satisfactory way, without regard to the time consumed in doing it. The "summer work" has been made more practical and definite in character, each student being required to spend one month in an office or in equivalent draughting work, to work out one rendered design from a given programme, and to write an essay or make a series of measured drawings, as he may elect, subject to official approval.

The Columbia Fellowship was won by Herbert Van Wagenen, of the Class of 1899. Since the retirement of Professor Ware there have been no changes in the staff of the school.

The Department of Architecture of the University of Pennsylvania reports an enrollment numbering 106 students this year, showing a growth in recent years from an average of 55, prior to 1902-3, to 65, 85 and 106. It has enlarged quarters, now occupying the third floor of College Hall, the principal University building, a suite of fourteen rooms, and there is a movement, now well under way, to secure $500,000 for a new building, to be complete in its provision for the most advanced type of instruction in architecture.

There has been established, for local architects and "principal" draughtsmen in charge of designing, a plan for the study of design under the criticism of Professor Cret, with the full resources of the school at command. In order that the members of the atelier thus formed may secure its advantages without any feeling of constraint or loss of dignity, its work is conducted in quarters set aside for the purpose, criticism is rendered any weekday afternoon but Saturday, in the hour between four and five, and studies may be developed for criticism, either at the office of the member or at the University, where the library is available. A small fee is charged to cover incidental expenses. In the Summer School is offered the preparation necessary to college graduates wishing to take the Degree in Architecture by two years of work, and to draughtsmen who desire to study design at once without entering the special course. The following changes in the corps of instruction have taken place, viz: Professor Dana's resignation to the honorary Professorship of Art, after fourteen years of generous and highly valued service; Mr. McGoodwin's withdrawal to accept an instructorship in the Architectural Department of Washington University, his place being taken by Mr. Philip R. Whitney, a graduate of the Massachusetts Institute of Technology in 1902, and Mr. Thomas Nolan's promotion to an assistant-professorship. The first holder of the University Fellowship, Midgely Walter Hill, has completed, and the second, Luther Morris Leisenring, has begun, the required year of foreign travel and study.

The Department of Architecture at Harvard University has begun its work this year under favorable conditions. The total number of students in the department this year is 122, as against 117 last year. During the summer, important additions to the collections were set up in Robinson Hall, including a number of ancient fragments of great interest, secured in Rome, and a full-size model of one corner of the Temple of Niké Apteros, besides a number of unique Greek casts.

The most noteworthy event to be recorded is the establishment by Charles F. McKim, in honor of his wife, of the Julia Amory Appleton Fellowship in Architecture of the annual value of $1,000. Mr. L. P. Burham was appointed as the first holder of this fellowship, and will spend the winter at the American Academy in Rome. The Appleton Fellowship and the Robinson Fellowship will now be offered in alternate years, and will usually be held for two years.

At Syracuse University, the space assigned to the Department of Architecture has been somewhat enlarged; the Architectural Library has been added to and the Faculty of the course has been strengthened by the addition of a professor in water-color sketching and rendering. This professor has just returned from a year's study at Paris. There are thirty-four students registered in the course this year, an increase of two over last year. There were nine graduates last year.

Besides the professional schools at the Massachusetts Institute of Technology, Cornell University, the University of Illinois, Columbia University, the University of Pennsylvania, Harvard University, Syracuse University, Washington University, St. Louis, and the University of California (to name them in the order of their establishment). The Society of Beaux-Arts, Architects, in New York, has for some years, established competitions in design for draughtsmen, and maintained ateliers in New York. Opportunities for more elementary studies have also been offered in the Pratt Institute, in Brooklyn; the Drexel Institute, in Philadelphia; the Armour Institute, in Chicago, and by several schools of correspondence, especially by the International School, of Scranton, Pa., and the Armour School, at Chicago. The usefulness of the Brooklyn and Chicago schools is necessarily limited to these cities, but the competitions of the Beaux-Arts Society are open to draughtsmen in any part of the country. The number of students who take part in these competitions is much gerater than those of any single architectural school in the country, and the amount of work done by the students, although entirely night work, compares favorably in amount with that of other institutions. Up to September 1, last, 238 students had submitted work, of whom 113 were new recruits. Of these men 136 are residents of New York, and 102 are members of various ateliers in other cities; 184 of them have rendered finished drawings, 80 of these being new students, and 104 old students.

Besides the work in the city of New York, conducted by the ateliers of Henry Hornbostel, Donn Barber and Frank E. Perkins, there are ateliers in other cities, as follows: In Washington, D. C., atelier of Theodore Pietsh; in Philadelphia, the atelier conducted by Professor Cret, of the University of Pennsylvania; at Chicago, Ill., the atelier of B. E. Holden; at Baltimore, Md., the atelier of B. P. Tuzo; at Rochester, N. Y., the atelier of C. F. Bragdon, and at San Francisco, Cal., the atelier of C. P. Weeks. Besides these, designs are sent in from the Washington University, St. Louis, under the direction of Professor Mann; and from the Rhode Island School of Design, Providence, R. I., under the direction of Professor E. B. Homer.

The Beaux-Arts Society Scholarship, with a value of $2,000, has been awarded for the first time this year to George A. Licht, of the atelier Freedlander, New York.

It is obvious from the above that the Society of Beaux-Arts Architects is doing an important work in architectural education, especially for the very large class of young men who, from their circumstances, are unable to attend the regular schools. A similar class will be reached at an earlier stage of their career by the correspondence schools, which are planning to add better-organized courses in architecture to their curricula. Excellent text-books in the elementary studies of the orders have already been published by these institutions, and they ought to be able to assist in raising the standard of admission to the regular professional schools.

The American Academy in Rome, which was incorporated in June, 1897, under the laws of the State of New York, bids fair to become the culmination of architectural education in this country. Hitherto the policy of the Academy has confined its advantages mainly to the holders of its special scholarships, but Mr. Breck, of New York, the distinguished painter who has recently been appointed to the directorship, has been authorized to extend the advantages of the Academy as far as possible to properly accredited students, and the trustees hope that the

Academy may become the recognized center for holders of architectural fellowships from the principal architectural schools of the United States. This should add enormously to the usefulness and prestige of the institution.

The Academy at present still occupies the Villa del'Aurora, but the generosity of one of the trustees has enabled the Academy recently to purchase the Villa Miarfiori, which will therefore become its permanent home. The building is situated a short distance outside of the Porta Pia. The building is large and the grounds are spacious. There are at present five regular students at the Academy, with a certainty that this number will, within a short time, be increased to twelve. There are also a number of students not regular members who are allowed the privilege of the drawing-room, but do not reside at the villa. During the winter an exhibition will be held at the Metropolitan Museum of Art, in New York, of the work of students in the Academy. It is hoped that the American Academy may shortly secure national standing. In 1901 the Secretary of State of the United States authorized the American Ambassador at Rome to accept the position of Trustee *ex officio* of the Academy, and directed him to secure for it all the privileges and exemptions that are accorded by the Italian Government to like institutions in other countries. A bill to incorporate the American Academy in Rome, under the laws of the United States, has already passed the United States Senate, and it is confidently expected that the House of Representatives will shortly take favorable action thereupon.

Respectfully submitted,
For the Committee,
H. Langford Warren,
Chairman.

CHICAGO LETTER.

LAST YEAR'S WORK.—THE MARSHALL FIELD ADDITION.—THE FIRST NATIONAL BANK.—THEODORE THOMAS'S MUSIC HALL.—THE FREIGHT SUBWAY.—DIFFICULTIES IN THE WAY OF A PASSENGER SUBWAY.—SUGGESTED GROUPING OF ALL RAILWAY STATIONS.

THE closing of the year 1904 brings us to the point when retrospection is an interesting act, for in the year that has just passed we see one of unusual prosperity for Chicago. Few years have shown equal activity in building lines, and only twice in the history of the city have the totals exceeded those of the year which has just closed. The permits for building during the last twelve months have amounted to 7,131, with an outlay of $44,543,090, while in 1903 there were only 6,135 permits, with an expenditure of $33,645,025, showing an increase of nearly eleven millions spent in building over the amount spent in the year preceding. Reliable trade journals report unusual activity in manufactured building materials. The steel industry has not been in such a healthy condition for several years as it is to-day.

A curious little experience has recently shown how our home products are appreciated abroad. One of our hardware firms, that of Orr & Lockett, have recently sent a three thousand dollar order of builders' hardware to China, to be used in the palace of the viceroy.

Many large buildings in the down-town district are now in process of construction, notable among these being the Rector Building, Republic Building, Buck and Rayner Building, Chapin and Gore Building and the Heyworth Building. In all the big down-town structures it absolutely now seems that, to look at them from the standpoint of the architect, there was little to admire, in fact, little of his work to discover; but that to the engineer belonged all the consideration. Chicago's utilitarian instinct is painfully, perhaps wisely, noticeable when it comes to the matter of sky-scrapers.

Marshall Field is about to add a new "quarter" to his already huge structure. Prints of this new portion were published in one of the local papers a few days ago, showing the elevation to be very similar in character to the last part recently erected. This portion of the great emporium is most admirably arranged, and suited to its purpose, but on the exterior is without any marked architectural features, being chiefly a solid, honest wall pierced with windows. This fact was especially emphasized by the fact that the print of the prospective building was published in one of the local papers upside down, and probably not one person in a dozen noticed the mistake. Though similar in outward appearance, the new portion will differ in the interior from that most recently erected in several very practical and, for this part of the country, new features There will be three basements, in which will be situated salesroom, shipping-room, mechanical plant, receiving-rooms, etc. The subway floor will be on a level with the Chicago subway tracks. The foundations will extend sixty feet below this level, or one hundred feet below the sidewalk line. To make all this underground life possible, a most thorough system of ventilation will be installed, which will come nearer, it is said, to solving the ventilation problem than has yet been done. Combined with this will be an equally elaborate system of drainage. The shipping-room will have the best possible equipment for handling the thousands of packages which go out of this great place daily. There will be elevators for lifting the vans and horses or electric vans directly from the shipping-rooms. The first basement will be devoted to salesrooms, materially enlarging the present basement, which already is claimed to be the largest in the world. The work for this mammoth basement is to be begun while the old building still stands and is occupied; in fact, so much of the foundation will be laid under the present building that when that is torn down the actual work on the new building above ground can be commenced with but little delay. With such feats as this, it is no wonder that Chicago's enthusiasm for the engineer is great.

Mandel Brothers, not to be outdone by their rival, Field, will undertake extensive additions to their already large store early in the present year.

One of the finest and largest structures which has been completed this year is the First National Bank Building. This building has been erected in sections, in this way holding on to many of its tenants, who preferred to suffer some inconvenience rather than be subjected to the still greater one of hunting up a new abiding place. The bank proper is just now having the finishing touches put to it; the first portion finished is being cleaned to match the white portion just completed.

The exterior of the building is without any special architectural feature other than those which must of necessity be present in every building; but in the interior the bank itself is not without much dignity and elegance, and is, unquestionably, the finest banking-room in the West—some say in the United States. Entering from Dearborn street, through an entrance which has not yet been turned over to the public, a large central rotunda extending through several stories receives the visitor. This rotunda is entirely faced with white marble, treated in the most severe manner. Pilasters extend from the floor to the ceiling, the last story being arcaded, with marble balustrades between the pilasters. In this rotunda are located many of the desks of the Bank's corps, and the appointments and furnishings of these desks are kept most simple in treatment. A green marble shelf runs around under the openings at the desks. The mouldings are all very simple in character, as well as all the metal-work, which harmonizes with them in this particular. The bronze grilles, the electroliers, etc., are all of classic simplicity, and have much of dignity about them.

Two large niches or alcoves, faced with white marble like the rest of the rotunda, are at either side of the Dearborn street entrance-door, the exact use of them having not yet been shown to the public, as they are not entirely completed. Possibly they will hold large electroliers or some still more decorative feature. From this central portion access is given to two large side wings, one facing on Dearborn and the other on Monroe street. These wings are similarly treated in white, plaster being here substituted for marble. The ceiling is in classic caissons. A second entrance at the back of the Monroe street side affords ample accommodation for entrance and exit to the crowds during the rush hours. The white marble stairs for this entrance are within the bank precincts proper, and are made an architectural feature by the white marble seat which surrounds them in place of balustrades, their newel-post transforming itself into a portion of the arm at the end of the seat.

One well-designed feature is the mahogany standing-desks through the central rotunda. The ends of these, as well as the mahogany settles, being similar in design. With almost no marked decorative feature in the way of color scheme, the whole interior is dignified and impressive from its size and simplicity. The Monroe street entrance has a similar white marble treatment, but is cheapened by the cigar-stands, etc., which have been permitted in it, as well as by the very commonplace transparency, bearing the legend, "First National Bank," over the entrance to the marble stairs before alluded to.

All Chicago has been filled with sorrow over the death of Mr. Theodore Thomas, leader of the Chicago Orchestra. It has seemed especially sad, coming, as it did, when Mr. Thomas had realized his long-cherished wish of having a permanent home for his orchestra. He had only conducted one concert in Music Hall when his fatal illness occurred.

Music Hall is situated nearly opposite to the Art Institute, but a little to the south. It is a comparatively low building, the upper stories of brick being essentially Colonial in style, while the two lower ones, of stone, run into more French Renaissance lines. If it were not for the names of composers above the second story, one could easily imagine it was some down-town apartment-house. Passing through a small but pleasing vestibule, a very narrow foyer is reached, leading directly to the last row of seats in the parquette. Those holding these seats complain bitterly of the wintry draughts after their comfortable quarters in the old Auditorium. On entering the hall proper, the first impression is one of uncomfortable oppression, caused by the very low balcony, which extends over a third, possibly over a half of the space occupied by the parquette. This arrangement, which is most inartistic and unsatisfactory in every way, was evidently adopted to obtain greater seating space where space is so much needed.

In the memorial services held for Mr. Thomas, hundreds of subscribers to the building fund were unable to obtain admission to the building, and consequently the concert was repeated in the old, comfortable quarters at the Auditorium. Every available inch of room for seating purposes is used, the front seats being so near the platform, when the musicians are seated, that a sight of them is next to impossible. The pitch of the galleries is almost unpleasantly steep, but by this means the greatest amount of seating room is obtained.

The rent of the Auditorium has been a great burden on the orchestra organization, each year there being a deficit which public-spirited citizens had to make up. So it was decided that a special building should be erected for Mr. Thomas and his orchestra, and subscriptions were forthcoming from all quarters of Chicago—large ones from rich men and small ones from poor ones. And now we have a building so cramped in its proportions that it is hardly large enough to contain the holders of season-tickets, and those by no means always in comfortable places. The lover of music who can only afford to go occasionally, can only do so by securing his seat three weeks in advance, and then is only able, usually, to secure an undesirable one. It seemed a great pity, when Chicago subscribed so liberally to this building fund, that it should not have had an alternative opportunity to subscribe to a guaranty-fund to keep the orchestra in its old quarters, where there was room for everyone who cared to listen to these beautiful concerts.

It was said the acoustics of the Auditorium were not absolutely perfect, but where do we find many buildings that this could be said of? The musical critics, writing in the local papers, have found the new hall far from perfect, but whether Mr. Thomas himself was disappointed in this respect the public does not know, as he was seized with his last illness almost immediately after his first concert. The stage for the musicians looks especially cramped, after their generous quarters on the Auditorium stage, and though the background is certainly more artistic than that ugly old setting endeared to us by pleasant associations, still the arrangement here looks uncomfortable. Three tiers of seats, built like an amphitheatre of classic times line the back of the stage, the organ rising in turn behind them. In their old quarters, the musicians had no suitable retiring-rooms, which was a source of considerable discomfort to them, while in this building that trouble is obviated, as there are ample rooms for their accommodation at the rear of the stage.

In speaking of the Marshall Field plans, mention was made of one of the basements being on a level with the subway. Many people will hardly notice the small item, and do not at all realize that Chicago already has a subway twenty-four miles long, which has been in the process of construction for several years, and which, when completed, will have a length, thirty-one feet below the surface of the street, of over sixty miles. This subway is designed entirely for the transportation of freight, which, it has been estimated, after the road is completed, will amount to over fifty thousand tons daily. When in full running order, the road will have three thousand cars, all small affairs and hauled by one hundred and fifty engines of simple construction. Thirty-eight lines of railroad enter Chicago, and this subway will be operated between their freight and other depots. In this way everything, from coal delivered to ashes taken away, can be handled underground from the large downtown buildings, thus most materially lessening the congested condition of the streets. This will be an especial relief in the wholesale districts, where much of the receiving and shipping of goods has been immediately in front of the stores and directly across the sidewalks.

There are two sizes of tubes in the subway. The lines which extend beneath the principal streets are 11 feet in width and 12 feet 6 inches in height, while the cross-section lines are a trifle larger, and all are arched and laid up in concrete. The construction of this subway has caused consternation to owners and architects of high buildings in its immediate vicinity. Although the promoters have vigorously denied that they were the guilty parties, yet unexpected and inexplicable settlements and cracks, necessitating the use of jack-screws, have made owners more than suspicious that the effect of working below on treacherous soil has produced this result.

Chicago is desirous of also having a passenger subway, and Mr. August Belmont, thinking of our lack of rock and New York's superabundance of it, remarked that "compared with the task which confronted New York, Chicago's problem of constructing a passenger subway will be like boring a hole through cheese." However, this is hardly the case, and such a bore made under the downtown district is said to contain more problems for the engineer than work of any similar nature in the country. Chicago's foundation problem is a serious one always, owing to the peculiar physical composition of the soil. As is universally known, but often forgotten by the average citizen, under all of Chicago is a stratum of soft, oozy clay, which holds water like a sponge. On this clay the lighter business block, not the sky-scrapers, rest on wide pyramidal foundations. In excavating for a subway, which would have to be at least twenty-five feet below the surface, miles of this spongy, oozy soil would be opened up, and with the immense weight of the buildings upon it would result in squeezing out of it so much water as to materially lessen its bulk, on which the foundations rest. This could only result in dangerous settling of buildings. Mr. George W. Jackson, engineer of the construction work of the Illinois Tunnel Company, is reported as saying:

"To guard against the danger, an elaborate system of bulkheading would have to be used. It would be necessary before touching the work of excavation to construct along the route of the proposed bore, on both sides, a waterproof wall from grade level to a point several feet below the proposed lowest point of the subway.

"This wall would be what, in the engineering world, is known as sheet-piling, consisting of huge plates of steel attached to supporting piles driven into the ground in the same manner that ordinary wooden piles are driven for foundations. The plates would overlap and fit together in such a manner that little or no water could ooze between them. With this safe-guarding wall in place, the work of excavating would begin, and the piling would be held in place by braces until the masonry work was completed. The expense of this system of construction would be much greater than if the bore had to be blasted out of solid rock."

With all these possible and actual changes underground, there is much talk of a great change in the setting of one of Chicago's most prominent features—its railway service. Situated, as Chicago is, in the center of a vast country, the transfer of passengers, baggage and mail from eastern to western roads and vice versa from the different stations in various parts of the city is a decided problem. Chicago railway traffic is too great to permit of any Union Station. Mr. F. A. Delano, former general manager of the Chicago, Burlington & Quincy Railroad, has carefully worked out a scheme, which, though colossal, certainly appears practicable. In outline, Mr. Delano's plan contemplates the erection of five stations, each one block in width, between State street on the east and the river on the west. The idea is to erect these stations on Taylor or Twelfth street, the street selected for the site to be widened into a boulevard of generous width. In this way all the roads which enter Chicago would have their terminals side by side. If the site at Twelfth street were selected, the railroads would utilize the territory bounded by State street, Twelfth street, the river and Sixteenth street. The channel of the river could be straightened between Twelfth and Sixteenth streets, thus giving ample space for the five stations, which should extend west from State street, while space could be reserved west of the river for a sixth, when it should be required. Not only are the present six terminals most inconveniently situated as regards one another, but their surroundings are such as to give a most unpleasant impression to anyone entering Chicago.

One feels, if Chicago push were allowed full swing, that even a native-born, after a few months' sojourn away from the city, would hardly be able to recognize it. It has even been advocated that a change in the position of the mouth of the river might be a good thing, artificially carrying it a mile farther north. Much of this reminds one of the block village wiped off from the floor by a child's hand, and "now let's begin to build it all over again." In the meantime we have our same dirty old streets, our same dirty old atmosphere.

STREET ARCHITECTURE[1]—II.

THIS suggests another question as to the best way of laying out street architecture on a general scheme. Should it be treated as one whole—a single design to which every builder of a part must conform, or is the building line to be the only rule to which every one must work, all else—style, scale and architectural treatment—being left to the individual taste of the several builders? Is the architecture of the street to be individual or collective, accidental or regular? There is much, no doubt, to be said for either alternative. If we recall to memory the streets that have delighted us above all others in our travels, I fancy the picture that will rise in the mind's eye of most of us will be the street irregular, winding perhaps among the magpie black-and-white houses of Shrewsbury, or the carved and overhanging timber fronts of Hildesheim which seem almost too quaint to be off the stage of a theatre; or the High street of Oxford, with its stately series of colleges and churches set off by the more modest buildings that serve as a foil to their beauties; or the arcades of Bologna and many an old Italian city; or the shadowy eaves of Berne and Lucerne; or Lisieux with its slated house fronts; Caen and Rouen; or such streets as abound in the old cathedral and county towns of England, with fronts of mellow brick or hoary stone, and here and there a glimpse of a trim garden or masses of foliage from overhanging trees—these are the streets we love and of which we cherish the memories rather than the formal splendors of modern improvements. But these streets that we love are not to be had for the asking. They are the outcome not of design but of accident. They are the creation of individualism, of each man's desire to house himself according to his own taste, and so each house has in its degree an historical interest. The result is not so much architectural as picturesque. The Strand of three or four years ago was, and the western part of it still is, a street of this kind, eminently picturesque, deriving its interest from variety of color, sky-line and height, all combining when seen in perspective into a certain agreeable confusion and intricacy of detail that was pleasing, although when one came to examine the buildings severally, except the few that had survived from the seventeenth or eighteenth century, there was hardly a good one among them. Such a street cannot be designed, it must come of itself, and it requires time and weather to ripen it to perfection.

But the new Strand cannot wait for time and weather; the buildings along the new frontage have begun to rise and will continue to spring up with magic rapidity. The north side of the street will soon be lined with buildings of some kind or other, and the question is whether they should be drilled into regularity as was done in the case of Regent street and the terraces on Crown land facing the Mall and those in Regent Park, or else be left to the individual taste of the owners, subject only to their satisfying the taste of the County Council. The latter is the plan proposed at present, though perhaps it is not too late to revert to the other should it be thought desirable. I confess to regarding the unrestrained or practically unrestrained genius of the commercial architecture of to-day with misgiving. If we may judge by what is now going on in the Brompton-road the result will probably be a competition in which every house will try to outshine its neighbors by cramming on more ornament, overpowering it in splendor, and overtopping it in height. Better far than this the monotony of Gower street or the unloveliness of Wimpole street—but the days for sober building of that kind it is to be feared are gone forever. The tide of self-advertisement is rising; it has risen high enough to capture the last stronghold of journalism, and it has laid nine-tenths of our architecture at its feet. It is held that architecture to be good must be smart; art is supposed to consist in ornament, and ornament is valued in proportion to its quantity, not to its quality. Nothing has done more to help this principle into practice than the introduction of terra-cotta as a building material. After the first cost of the model, it is as cheap to cast ornamental work as plain, and as the ornamental work makes more show for the same money, there is no end to its abuse. To the fatal facility afforded by this dangerous material we owe the trimmings round door and window which have violated the respectability of Russell square, the unspeakable gorgeousness that disturbs the repose of the purlieus of Berkeley square, and the elaborate arcades and great dome that seem to ride insecurely on the edge of plate-glass windows in the Brompton-road. It is a great pity that terra-cotta should have been so misused. Properly employed as it was in many towns of North Italy, notably at Cremona and Pavia, and in the fine roundels at Hampton Court, or the tombs at Layer Marney, terra-cotta is a noble material, and when glazed it may rise to the dignity of Robbia ware. But cheap repetition of ornament vulgarizes it; when once used the moulds should be destroyed, except in case of simple mouldings, or such conventional embellishments as the egg-and-dart, or dentils, and such like simple ornaments which alone admit of repetition to any extent without awakening feelings of fatigue and disgust.

But the mention of plate-glass reminds me that I have scarcely time left to speak of what is perhaps the crucial difficulty of street architecture, namely, the shop-window. In this age of display and self-advertisement, when commercial modesty would seem to have fled like Astræa to the heavens, it is thought necessary to abolish the front wall of the ground floor, and substitute huge sheets of plate-glass behind which the wares can be exhibited in lavish profusion. There are a few exceptions, but very few. I suppose a tailor who broke out one of these large windows and displayed his wares instead of the usual wire blind would lose his customers; and now and then one finds a shop deliberately retaining the modest window and small panes of 50 years ago, and I think one always feels instinctively that the wares in that shop must be above the average. But the rule is the other way. These open shop fronts have come—as the slang phrase goes—"to stay," and architects will have to reckon with them just as the sculptor has to reckon with the modern trousers and frock coat, which cause him equal distress and perplexity. Accepting, then, the great plate-glass ground floor as inevitable, how are we to treat it architecturally so as to make it tolerable, of if possible more than tolerable, actually an element of beauty in the façade? For it ought to be possible to do this if it is one of the glories of architecture, as we believe, to accommodate itself to circumstance and necessity, and not only to construct suitably, but to satisfy the eye and give pleasure by expressing the conditions of the construction.

This, then, is the problem. The ground story must have no front and no partitions and no supports except against the party-wall on either side; but the upper stories must be enclosed for habitation and be divided by partitions into rooms. The whole mass of this upper part, sometimes of enormous height, has to rest on an iron girder at the ceiling level of the ground story, a girder which has no supports but an iron stanchion at each end. How are we to treat this on the orthodox principle of architecture should be the expression of the construction, when the real construction of such a building has so little with which to appeal to the eye? It may, of course, be argued that the old construction with piers and arches satisfied the artistic sense and pleased the eye because we knew from experience that it was sufficient for support, and that when we find from experience that two steel stanchions and a beam across them will do as well, our artistic sense will, or should, adapt itself to the new conditions, and rest equally satisfied in them. This is, no doubt, a hard saying, but yet there is truth behind it. To bring this construction within the domain of art it is only necessary that it should be visible. What support there is must be seen, for art only deals with what meets the eye. It will not satisfy the artistic sense to know that the support is there unless it can also be seen, and then the eye, appreciating the difference between the properties of iron and those of brick and stone, may learn to be satisfied, and admit the novel construction into the domain of art. There seems no reason why the stanchions and bressummers should not be shown and treated architecturally. But so far from this being done now, the practice is to hide them carefully as if there were something disgraceful in being obliged to prop the upper stories, and the necessary columns or stanchions are either concealed behind stone facings to give a fictitious appearance of stone construction, which, if real, would be wholly unequal to its apparent duty, or else they are encased in mirrors which prevent their being seen at all. So long as the building appears to be supported on the edge of its plate-glass shop-front its architectural redemption is past hoping for.

The same inconsistency prevails in the upper stories. The solid lower story is done away with to suit a novel requirement. But the builder puts above it just the same upper stories that would have been there if the lower part had been built in the old way. This cannot be right; so radical a change in the supports ought to affect the character of the whole elevation. We cling to the old traditions in one part though we abandon them in the other, and the result is ludicrous when it is not offensive. What can be more ridiculous than the oriel-window we often see insecurely balancing itself on the middle of a girder? These features belong

[1] Extracts from a lecture by Mr. T. G. Jacson, R.A., before the Society of Arts, and published in the Journal of the Society. Continued from page 32, No. 1518.

to the old way of building, and have no place in the new. Till we recognize this and make up our minds that if we accept the new mode of construction by iron we must break definitely with the traditions of brick and stone, there will be no hope for us.

The best solution I can suggest is that as the lower story must be of iron construction the upper stories should be so too, as far as is consistent with their purpose. To manage this we must start with a full recognition of the difference between the properties of iron or steel and those of stone or brick. The strength of masonry or brickwork, setting aside the cohesion of mortar, which should be regarded rather as an accessory, consists in its weight and its resistance to downward crushing loads. If exposed to lateral force its stability depends either on its *vis inertiæ*, or on the equilibrium of forces acting in opposite directions. It has no tensile strength and no elasticity, or very little, and the only lateral tie it has to depend on is that of the bonding or interlacing of the stones or bricks that compose it. Contrast this with the methods of carpentry. Timber construction has all the properties that are wanting in masonry or brickwork. It has tensile strength and elasticity, and it can be framed so as to tie the fabric securely together. Good carpentry hangs together by its joints and framing, and will submit to considerable distortion before it gives way. The half-timbered houses of England and France afford many instances of this: they are often out of the perpendicular, leaning forward, falling backward, or inclined sideways, and yet, so long as the timber is sound and the tenons hold, they remain secure.

This half-timber construction, be it observed further, is a reversion from arcuated construction—it is in the literal sense of the word a *trabeated* style—a style of posts and beams quite as much so in its own way as the Parthenon and the older buildings that preceded it, and reproduced in stone the elementary forms of wooden construction.

Now, in these half-timbered houses I think we may find a suggestion of what might be done in the way of construction with iron and steel. Iron construction, after all, is very like carpentry. It is a trabeated style. It has the tensile strength, the rigidity and the elasticity of timber, but in a superior degree, and it hangs together by its joints, cleats and bolts, much as carpentry does by its tenons and mortices. Just as the half-timbering forms the skeleton of a Surrey cottage or a Shropshire mansion, which is filled in with the flesh and skin of brick nogging or cob and plaster, so might a skeleton of iron framing contain a similar wall-veil or curtain to make the interior of the upper floors habitable.

Let us imagine, then, the street front of a row of shops below with several stories above. The supports of the great bressummer would be exposed to view, made preferably of cast-iron, and between them, not as now in front of them, would be the great plate-glass screen enclosing the shop. The bressummer itself would also be exposed to view, protected by some salient feature to throw off the wet, and thus the eye would be contented by the exhibition of the supports. The upper stories would be formed by a skeleton of iron or steel, filled in with brick or stone, but showing itself on the surface just like the half-timbering which was its precursor. The strength of the building would consist in this framing, and the filling-in might, therefore, be only so thick as was necessary to secure an even temperature in the rooms. Probably two four-and-a-half-inch walls with bonders and a hollow space between would suffice, the inner lining being contrived so as to cover the iron frame and prevent mischief from condensation. The interior partitions would, of course, be formed in the same way and the floor would naturally be constructed of iron and concrete. Following again the precedent of half-timbered houses, the upper floors might be made to overhang by projecting the joists of each story successively beyond the face of that below. In this way I can conceive an admirable effect being produced. The filling-in might be either plain or modeled with plaster in relief, or faced with glazed bricks or colored terra cotta, or decorated with sgraffito, or treated in a dozen different ways suitable to the embellishment of plain surfaces, for, let us hope, there will be no oriel-windows hanging in air, nor any fantastic freaks such as we are now suffering from.

M. Viollet-le-Duc in his lectures on architecture—lectures which, like the Verrine orations, were written but never delivered—has several sketches for construction with iron supports. Some of them are suggestive, but the majority seem to cling too closely to the Gothic art he loved, to be pleasing in combination with the new principles he is advocating. Gothic vaults of masonry, springing from stone capitals which have no columns below them, but are supported by inclined struts of iron projecting from a distant wall, do not impress one favorably, nor does there seem any object in retaining the Gothic vault at such a sacrifice. But he shows a street front constructed somewhat in the manner I have described, which commends itself at once as sensibly contrived.

Whether or no anything of the kind has ever been built I cannot say. It seems to me an experiment that would be most interesting and instructive to carry out.

Whether this iron construction will prove durable or not is another question. One has been told that the life of a girder exposed to changes of temperature is not more than that of a generation. It depends a good deal on the thin skin of paint that protects it. What will happen in the inside of box-girders that can never be painted remains to be seen. What will happen in case of a great fire is also a grave question. But, after all, these buildings are not intended for immortality; if they last for a generation it may be enough. The constant changes that London undergoes make doubtful the permanence of anything one does. A house I built in Dover Street some seven or eight years ago has been already pulled down to make way for a station on the Tube railway. The great mass of Walsingham House, just destroyed, and about to be replaced by a monster hotel, had only enjoyed a life of some twenty years. It fell to my lot to demolish an expensive marble staircase and entrance hall of one of the city Companies which had only been built thirty years. Thirty years hence the new marble staircase I made in another part of the building will perhaps follow its predecessor into oblivion, and the city Company itself may conceivably have ceased to exist. The changes in London are so incessant and of late so sweeping that he would be a bold man who would prophesy a long life to any building in it whether old or new. The number of Sir Christopher Wren's fine city churches is being diminished. One by one they are being pulled down and their sites covered by banks and offices. Huge piles of chambers cover what ten years ago or less were the pleasant retired gardens and courts of New Inn and Clement's Inn, and Clifford's Inn is doomed to a similar fate. If these monuments of architectural and historic interest are unable to save themselves why should we expect or wish for the ordinary shop front more than an ephemeral existence?

But though street architecture may be evanescent, the streets themselves—at least the more important of them—will probably continue to run on their present lines more or less, and if, as now happens, any great innovation has to take place it is important that the new lines should be properly laid down.

ILLUSTRATIONS

Hall of the National Geographical Society, Washington, D. C. Messrs. Francis R. Allen and Charles Collins, Architects, Boston, Mass.

The Danielson-Lincoln Memorial Library, Brimfield, Mass. Mr. Edwin J. Lewis, Jr., Architect, Boston, Mass. Two Plates.

House of James H. Proctor, Esq., Ipswich, Mass. Mr. Ernest M. A. Machado, Architect, Boston, Mass.

House of Richard S. Russell, Esq., North Andover, Mass. Mr. Ernest M. A. Machado, Architect, Boston, Mass.

Chimneypiece in House of Paul Tuckerman, Esq., 115 East 69th St., New York, N. Y. Messrs. Hoppin, Koen & Huntington, Architects, New York, N. Y.

House of Daniel R. Craig, Esq., Wellesley, Mass. Mr. Willard D. Brown, Architect, Boston, Mass.

The Heinemann Picture Gallery, Munich, Bavaria. Herr Emanuel Seidl, Architect.

When we selected for republication from the last issue of *Blätter für Architektur* this interesting façade, we considered it a rather happy chance that we should be able to place before our readers one of the latest pieces of work of a man who was elected, last month, an Honorary Member of the American Institute of Architects. But, on consulting the record, we find that the new member is not Emanuel Seidl but Gabriel von Seidl. Fortunately the fact that of two Munich architects—brothers, we presume—one has been granted the nobiliary *von* does not at all detract from the architectural value of the design here shown.

Additional Illustrations in the International Edition.

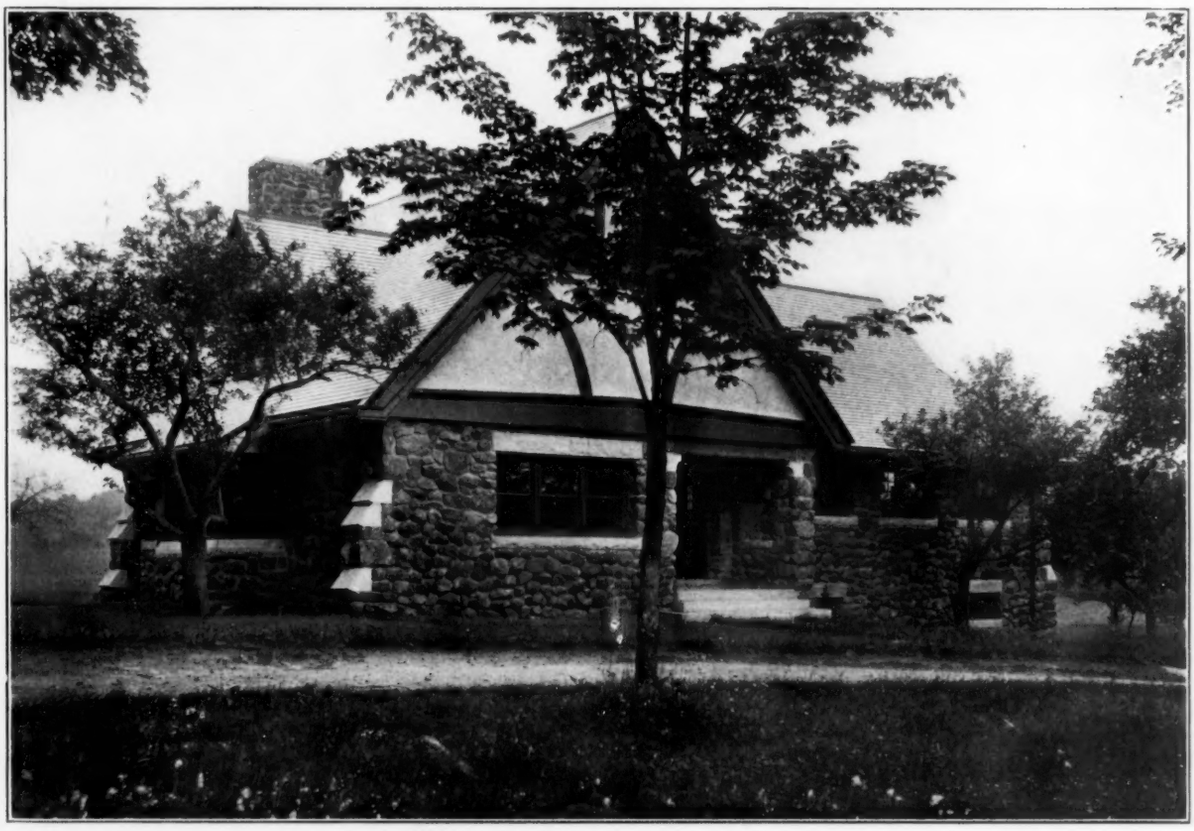
Detail of Central Doorway: Church of St. Bartholomew, Madison Ave. and 44th St., New York, N. Y. Messrs. McKim, Mead & White, Architects.

Detail of Left-hand Doorway of Same Church, Showing Sculpture by Mr. Herbert Adams.

DANIELSON-LINCOLN MEMORIAL LIBRARY, BRIMFIELD, MASS.

E. J. Lewis, Jr., Architect.

Copyright, 1905, by The American Architect.



DANIELSON-LINCOLN MEMORIAL LIBRARY, BRIMFIELD, MASS.

E. J. Lewis, Jr., Architect.

Copyright, 1905, by The American Architect.

THE COURTYARD FRONT.

THE GARDEN FRONT.

HOUSE OF JAMES H. PROCTOR, ESQ., IPSWICH, MASS.

Ernest M. A. Machado, Architect.

Copyright, 1905, by The American Architect.

HOUSE OF DANIEL R. CRAIG, ESQ., WELLESLEY, MASS.

Willard D. Brown, Architect.

Copyright, 1905, by The American Architect.

HOUSE OF RICHARD S. RUSSELL, ESQ., NORTH ANDOVER, MASS.

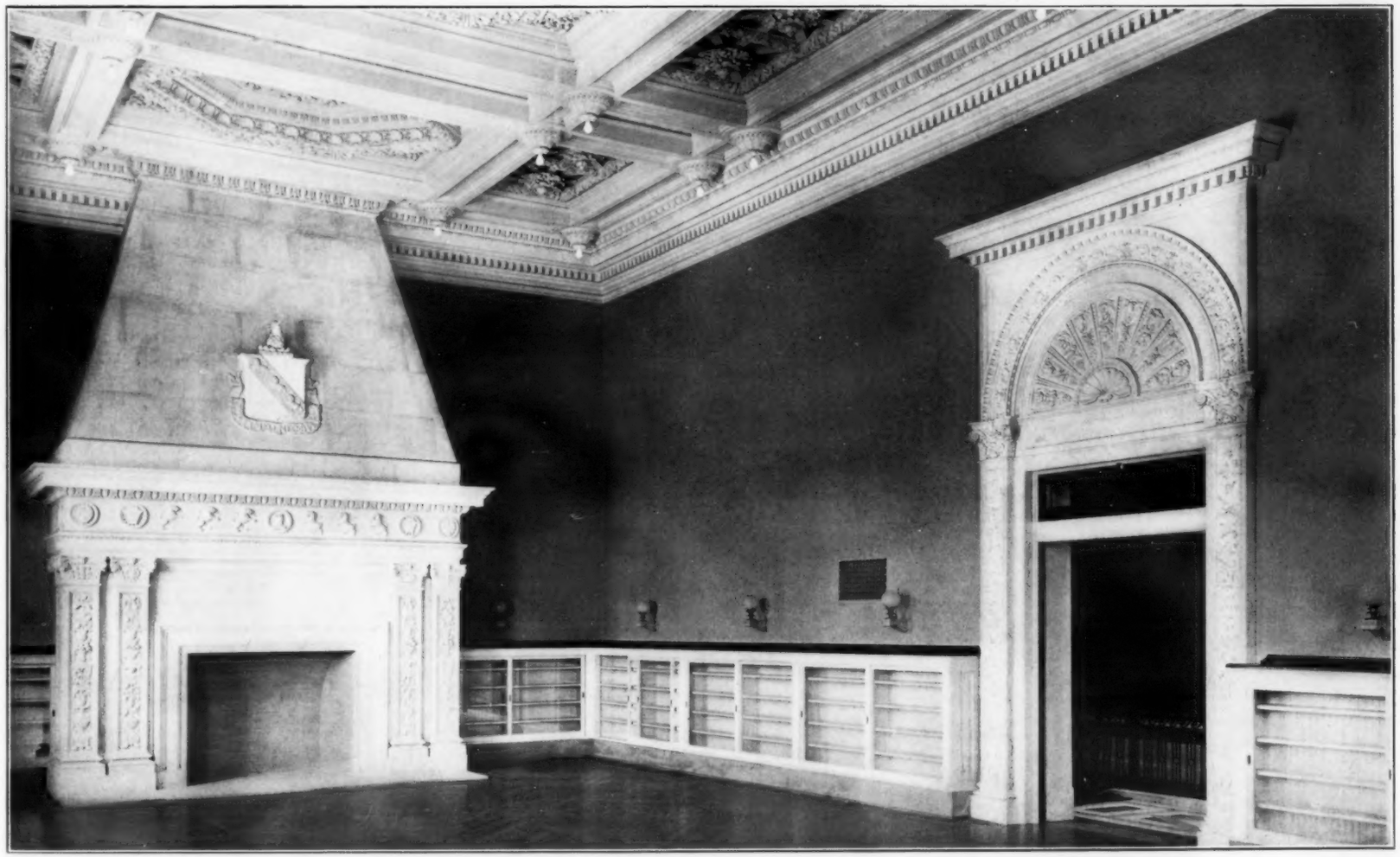
Ernest M. A. Machado, Architect.

Copyright, 1905, by The American Architect.

CHIMNEYPIECE IN HOUSE OF PAUL TUCKERMAN, ESQ., 115 EAST 69TH STREET, NEW YORK, N. Y.

Hoppin, Koen & Huntington, Architects.

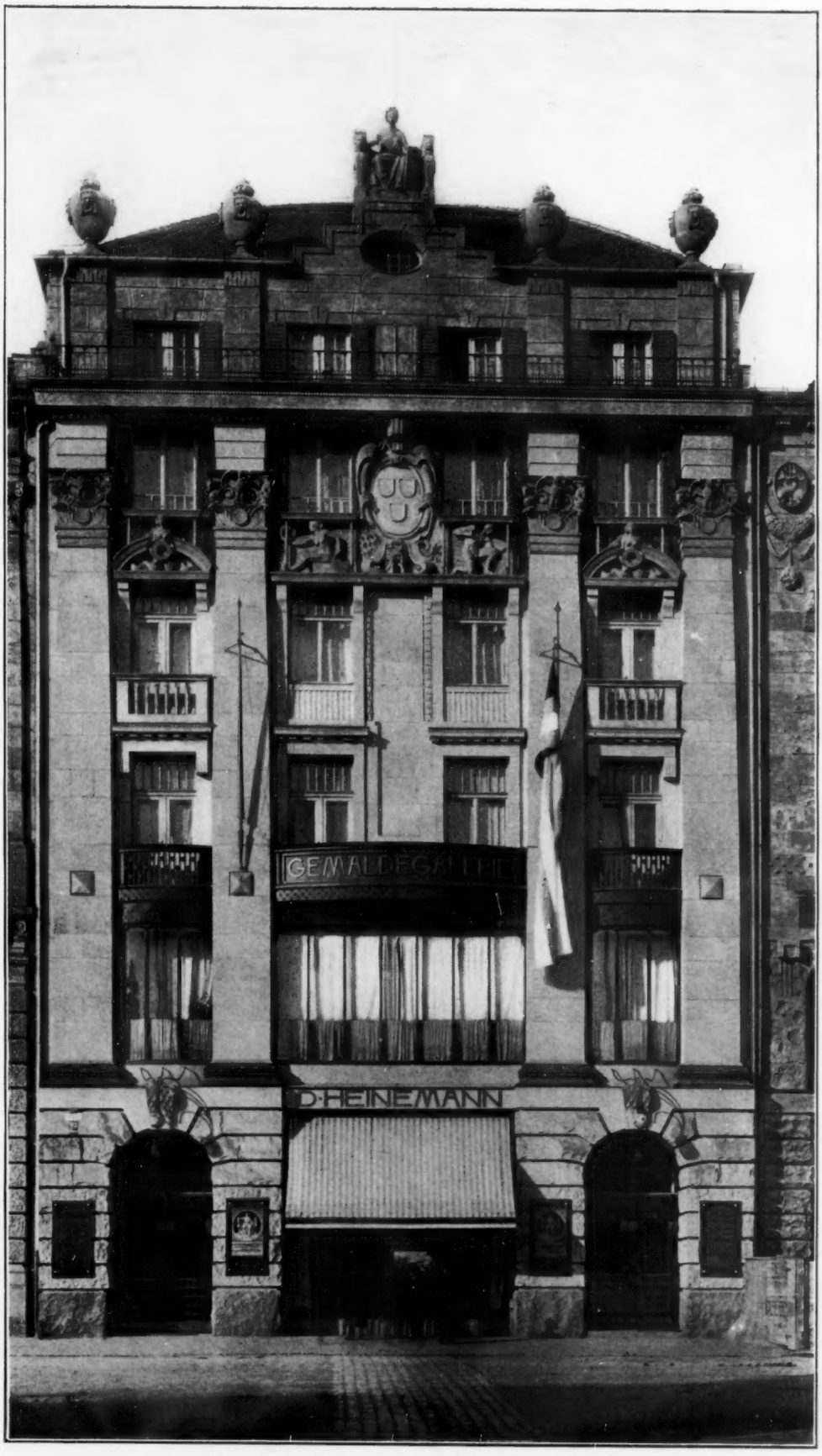
Copyright, 1905, by The American Architect.



HALL OF THE NATIONAL GEOGRAPHICAL SOCIETY, WASHINGTON, D. C.

Francis R. Allen and Charles A. Collins, Architects.

Copyright, 1905, by The American Architect.



HEINEMANN PICTURE-GALLERY, MUNICH, BAVARIA.

Emanuel Seidl, Architect.

From *Blätter für Architektur.*

As laid by us in the Billiard-room of the Larchmont Yacht Club, Larchmont, N. Y.

INTERLOCKING RUBBER TILING

Noiseless, non-slippery, waterproof, sanitary, durable. A perfect floor for offices, banking-rooms, court-rooms, school-rooms, libraries, hospital wards, cafés, bath-rooms, billiard rooms, vestibules, halls, church aisles, piazzas, etc. Laid directly on wood, stone, concrete or iron. Call or write.

Beware of Infringers. Patented.
Manufactured Solely by

New York Belting & Packing Company, Ltd

New York.....91-3 Chambers St.
Philadelphia.....724 Chestnut St.
Chicago.....150 Lake St.
St. Louis.....411 No. 3d St.
San Francisco.....605-7 Mission St.
London, Eng..Arthur L. Gibson & Co. 19 to 21 Tower St., Upper St. Martin's Lane, W. C.
Baltimore.....41 South Liberty St.
Boston.....232 Summer St.
Indianapolis, Ind..229 So. Meridian St.

RENAISSANCE DOORWAYS

RED CLOTH, GILT TOPS
Plates (104), each 10 x 14 inches
Price, $7.50

THE AMERICAN ARCHITECT
TIMES BUILDING
NEW YORK

SEATS OF THE COLONISTS

PART II.

Photographs and measured drawings of Chippendale furniture, together with descriptive text.

PRICE $5.00

"MONUMENTAL STAIRCASES."
40 Gelatine Plates, on bond paper, 9" x 11".
In Envelope. Price, $5.00.
THE AMERICAN ARCHITECT, Publishers.

IRON DOOR AND WINDOW GRILLES

RED CLOTH, GILT TOPS
Plates (104), each 10 x 14 inches
Price, $7.50

THE AMERICAN ARCHITECT
TIMES BUILDING
NEW YORK

THEATRE VENTILATION

TO BE SUCCESSFUL MUST BE POSITIVE

The air must be distributed with the utmost refinement, the temperature must be automatically controlled and the vitiated air must be immediately removed.

The Fan System insures these results. It is the system which we have perfected during an experience of 30 years, and which we are completely equipped to design and install.

B. F. STURTEVANT CO.

BOSTON, MASS.

NEW YORK PHILADELPHIA General Works and Office, Hyde Park, Mass. CHICAGO LONDON

The Northwestern Terra-Cotta Co.

Manufacturers of High Grade

Architectural Terra-Cotta

CHICAGO

A sample copy of "TOPICAL ARCHITECTURE" will be sent free to any address—*The American Architect, New York.*

Mason Safety Treads

For Stairs, Wood, Iron, Marble or Cement, new or old

HUNDREDS OF THOUSANDS IN USE

Am. Mason Safety Tread Co., Boston

J. W. TAYLOR'S PHOTOGRAPH SERIES OF American Architecture

324 Dearborn Street, CHICAGO, ILL.

Architectural Drawing Rendered

In Pen-and-Ink

E. P. MORRILL

31 Bedford Street, Boston

Perspectives Rendered

In Pen-and-Ink and Water-Color

WALTER M. CAMPBELL

8 Beacon Street, Boston, Mass.

E. ELDON DEANE

Architectural Colorist and Draughtsman

63 Seymour Building, Fifth Ave. Cor. 42d St., NEW YORK CITY

THE AMERICAN ARCHITECT AND BUILDING NEWS

IS PUBLISHED EVERY SATURDAY BY

THE AMERICAN ARCHITECT (Inc.)

Times Building, New York.

Advance Subscription Rates:

Regular Edition, $6.00 a year.

[Foreign Postage, $2.00 Extra.]

International Edition, $16.00 a year.

ALSO PUBLISHERS OF

Topical Architecture

(Monthly)

Subscription . . . . . $3.00 a year

☞ Payment should be made to The American Architect direct, either by draft or post-office order.

See last or next issue for the following advertisements:—

David Craig.
F. E. Cudell.
Morse, Williams & Co.
J. S. Thorn Co.

See the first issue of the month for the following advertisements:—

Atlas Portland Cement Co.
New Jersey Zinc Co.
Pitt, Wm. R.

WANTED

A PARTNERSHIP WANTED.—By an architect of experience and ability with a man or firm where his work would be the preparation of sketches, designing and general office work over the board. Is a graduate of one of the best architectural schools, and has good work to his credit; family matters compel change of location; give full particulars of business, etc. Address "5 A," care American Architect. (1520)

ARCHITECTURAL and civil engineer, is open for engagement, college graduate; 9 years' experience with steel construction for buildings, foundations, masonry, concrete; highest references. Address "5 B.," care American Architect. (1519)

WANTED.—Position with architectural firm by an experienced specification writer, office manager and general superintendent; 18 years' experience, 5 years with present employer. Address "6 A.," care American Architect. (1520-1521)

PROPOSALS

Treasury Department, Office of the Supervising Architect, Washington, D. C., January 30, 1905.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 25th day of February, and then opened, for the low-pressure steam heating apparatus, complete, in place, for the U. S. Post Office at Anniston, Alabama, in accordance with drawings and specifications, copies of which may be had at this office or at the office of the Superintendent at Anniston, Alabama, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. (1519-1520)

Treasury Department, Office of the Supervising Architect, Washington, D. C., January 28, 1905.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 23d day of March, 1905, and then opened, for the construction (except heating apparatus and wiring and conduit system) of the U. S. Post Office and Court House at Sherman, Texas, in accordance with the drawings and specification, copies of which may be had at this office or at the office of the Postmaster at Sherman, Texas, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. (1519-1520)

Treasury Department, Office of the Supervising Architect, Washington, D. C., January 28, 1905.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 20th day of March, 1905, and then opened, for the construction complete, of the U. S. Court House and Post Office at Elizabeth City, N. C., in accordance with drawings and specifications, copies of which may be had at this office or at the office of the Postmaster at Elizabeth City, N. C., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. (1519-1520)

Treasury Department, Office of the Supervising Architect, Washington, D. C., January 28, 1905.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 21st day of March, 1905, and then opened, for the construction, complete (except elevator and wiring), of the U. S. Post Office, Court House and Custom House, at Laredo, Texas, in accordance with drawings and specifications, copies of which may be had at this office, or at the office of the Postmaster at Laredo, Texas, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. (1519-1520)

Treasury Department, Office of the Supervising Architect, Washington, D. C., January 31st, 1905.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 1st day of March, 1905, and then opened, for the low-pressure steam heating and ventilating apparatus, complete in place, for the U. S. Post Office at Hastings, Nebraska, in accordance with drawings and specification, copies of which may be had at this office, or at the office of the Superintendent at Hastings, Neb., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. (1520-1521)

Treasury Department, Office of the Supervising Architect, Washington, D. C., February 2, 1905.—Sealed proposals will be received at this office until 3 o'clock P. M., on the 16th day of February, 1905, and then opened, for lookout gallery at the U. S. Post Office and Court House Building at Philadelphia, Pennsylvania, in accordance with the drawing and specification, copies of which may be had at this office or at the office of the Custodian at Philadelphia, Pennsylvania, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. (1520-1521)

Treasury Department, Office of the Supervising Architect, Washington, D. C., February 3, 1905.—Sealed proposals will be received on the 28th day of March, 1905, and then opened, for the construction (except elevators, heating apparatus, electric wiring and conduits) of the U. S. Post Office, Court House and Custom House, at Superior, Wisconsin, in accordance with the drawings and specification, copies of which may be had at this office, or at the office of the Postmaster, Superior, Wisconsin, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. (1520-1521)

Treasury Department, Office of the Supervising Architect, Washington, D. C., February 3, 1905.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 27th day of March, 1905, and then opened, for the construction complete, of the U. S. Post Office at Lebanon, Pennsylvania, in accordance with drawings and specifications, copies of which may be had at this office or at the office of the Postmaster at Lebanon, Pennsylvania, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. (1520-1521)

Treasury Department, Office of the Supervising Architect, Washington, D. C., February 4, 1905.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 3d day of March, 1905, and then opened, for the installation of a conduit and electric wiring system for the U. S. Marine Hospital at Savannah, Ga., in accordance with the drawings and specification, copies of which may be obtained at this office, or at the office of the Superintendent of Construction at Savannah, Ga., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. (1520-1521)

Treasury Department, Office of the Supervising Architect, Washington, D. C., February 4, 1905.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 9th day of March, 1905, and then opened for the low-pressure steam heating and ventilating apparatus complete, in place, for the U. S. Marine Hospital building at Savannah, Ga., in accordance with drawings and specifications, copies of which may be had at this office or at the office of the Superintendent at Savannah, Georgia, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. (1520-1521)

BUILDING NEWS.

Continued from Page IX.

replace its warehouse which was recently burned by a 3-story brick structure costing $400,000.

CHICAGO, ILL.—The Salvation Army will erect a 6-story building, costing $80,000 at 556-60 W. Madison St.

J. F. Knudson, 801 W. North Ave., has finished plans for a 2-story factory building, 60 x 180 ft., of mill construction, to be built at South Park Ave., for the Armstrong Bros. Tool Co., at a cost of $35,000.

The Oak Park Hospital Association has selected the site for its new $100,000 building, upon which work will start in the Spring.

The Passavant Memorial Hospital at 194 Superior St., will be enlarged by the Passavant Hospital Association, organized for that purpose. Jas. H. Eckels and Arthur L. Farwell are directors.

CHICAGO, ILL.—The Cook County Commissioners have adopted resolutions appointing a commission of 10 to represent

KOLL'S
Patent Lock Joint
Staved Columns
are particularly well adapted for out-door use. Made in all sizes from 5 in. to 42 in. diameter and proportionate lengths.
HARTMANN BROS. MFG. CO.
Mt. Vernon, N. Y., U. S. A.
N. Y. Office, 1123 Broadway.
Western Factory, Henry Sanders Co., 77-85 Weed St., Chicago, Ill.

THE YALE LOCKS, Builders' Hardware and Art Metal Work* are produced by the
Yale & Towne
Mfg. Company.
General Offices: 9-11-13 Murray St., New York City.
*"Artist and Artisan" is the title of an attractive Brochure dealing with the origin of the Hardware of Ornament (Art Metal Work) and its present development and uses. It will be sent on request.

HECLA IRON WORKS
N. 11th and Berry Sts., Brooklyn, N. Y.
ARCHITECTURAL METAL WORK
Stairs, Elevator Fronts, etc.
"HECLA FIREPROOFING" combines Metal with fireproof material for Windows, Doors, Stair Treads, etc.

MOST PEOPLE KNOW
MF
ROOFING TIN—
So did their grandfathers. To-day, we want you all to know it better. "The Terne which turns the elements" merits all the consideration you can give it and is now only awaiting a chance to prove conclusively its many points of superiority.
We can't tell you all about MF here—write our Advertising Department for a sample piece—for our MF Calendar—and for other data. They have it in quantity and will gladly supply you.
AMERICAN SHEET & TIN PLATE COMPANY
FRICK BUILDING, PITTSBURGH, PA.

BRONZE
JNO. WILLIAMS
BRONZE FOUNDRY AND WORKS
Wrought Iron Works
544 to 556 W. 27th St. NEW YORK
WROUGHT IRON

the county and act with a similar body from from the city for the purpose of discussing plans for a new county courthouse and city hall. The commissioners propose bonding the county for $3,000,000, the amount estimated for the completion of the county building. The proposition will be submitted to the people for vote at the April election. County Architect Harris W. Huehl, of Huehl & Schmid, is one of the commission representing the county.

CINCINNATI, O.—Plans for a new high school building to accommodate from 2,000 to 3,000 pupils are being considered by the building committee of the Union Board of High Schools.

DAVENPORT, IA.—Temple, Burrows & McLane have been commissioned to draw plans for the erection of a 5-story office building at 3d and Main Sts., to contain 100 office rooms. J. R. Lane is interested.

DES MOINES, IA.—The Board of Supervisors plan to rebuild the county poorhouse sometime this Spring.

DECATUR, ALA.—A $30,000 theatre is proposed. Cowell & Love, architects, Huntsville, are preparing plans.

DALLAS, TEX.—A report comes to us that Lucas Bros, managers of the St. George Hotel, will put up a new hostelry costing between $150,000 and $200,000.

DUBUQUE, IA.—Clausen & Clausen, architects, have plans under way for a plant for the Crescent Macaroni & Cracker Co., soon to be incorporated. The buildings will be three in number, including a 4-story brick factory, 90 x 96 ft., equipped in an up-to-date manner.

EDNA, TEX.—Bids are wanted by the Jackson County Commissioners until March 1 for erecting a courthouse building; estimated cost, $45,000. Address the County Judge, Edna.

EVANSTON, ILL.—The plans for the Bedford Public Library at Orrington Ave. and Church St., have been accepted by the Public Library Board. The structure will be of stone, two stories high, and will cost $100,000.

FAIRHAVEN, MASS.—We learn that a high school building is talked of, to cost about $200,000. Henry H. Rogers is mentioned as the doner.

FREEPORT, MINN.—Parkinson & Dockendorf, of La Crosse, have, it is reported, prepared plans for a building for the R. C. Church, which is to cost $35,000.

FORT SAM HOUSTON, TEX.—An amendment has been prepared and inserted in the bill passed by the Senate providing the sum of $75,000 for a new hospital at Fort Sam Houston.

FORT WORTH, TEX.—W. T. Camp will erect a 3-story brick apartment house costing $40,000, after plans by W. G. E. Rolaff, architect, Victoria building.

GLOVERSVILLE, N. Y.—The citizens voted on Jan. 31 to issue $100,000 bonds for erecting a high school. M. V. B. Stetson is city clerk.

GRAND RAPIDS, MICH.—It is reported that W. G. & F. S. Robinson, Houseman Block, are preparing plans for an apartment house to be erected by the Majestic Theatre Association on N. Park St., to cost $25,000.

GRUNDY, VA.—The Buchanan County Supervisors will receive bids on April 15 for erecting a $35,000 courthouse. Plans were prepared by Frank P. Milburn, Columbia, S. C.

GREENFIELD, MASS.—F. O. Wells will construct a 3-story apartment, built entirely of hollow concrete blocks and equipped with all modern appliances. It will be fireproof and will cover 100 x 153 ft. of ground. W. B. Reid, Holyoke, is the architect.

HAMMOND, IND.—Bids will be received by the Supervising Architect, Treasury Department, Washington, March 13, for the construction of the U. S. Post Office and Court House at Hammond.

HASTINGS, NEB.—The Supervising Architect, Washington, D. C., will receive bids until March 1 for the low pressure steam heating and ventilating apparatus for the U. S. Post Office, as advertised in THE AMERICAN ARCHITECT.

HARRISON, N. J.—Bower & Breitenbucher, architects, Harrison, have prepared plans for the Cross St. school, to cost $40,000.

HOBOKEN, N. J.—The trustees of the Stevens Institute of Technology have decided to have the original plans and specifications for the new Morton chemical laboratory redrawn, having been unable to increase the building fund to $110,000, the required amount. The fund at present is approximately between $75,000 and $85,000.

HOLYOKE, MASS.—The Farr Alpaca Co., of Holyoke, plans the erection of another addition to its plant. It is said that the company proposes expending $300,000 in increasing the facilities of its plant.

INDIANAPOLIS, IND.—It is said that W. J. Holliday proposes building an 8-story brick warehouse of mill construction after plans by Daggett & Co., Marion building.

JANESVILLE, WIS.—A foundry is to be built here for making gray-iron machine-castings. It will cost about $20,000 and employ some 50 men. H. L. Maxfield is interested.

THE J. L. MOTT IRON WORKS
88 Beekman Street, New York, N. Y.
The Tucker Improved Grease Trap
For use in Residences, Hotels, Clubs, etc.
Circulars may be had on application.

Copyright, 1902, by The J. L. Mott Iron Works.
BRANCHES
110 Fifth Ave., New York — 911 Locust St., St. Louis
378 Boylston St., Boston — Flood Bldg., San Francisc
1128 Walnut St., Philadelphia — 135 Adams St., Chicago

EXPANDED METAL
For Fireproofing and Concrete Construction
ASSOCIATED EXPANDED METAL COMPANIES Room 1205, 256 Broadway NEW YORK

Spiral Expanded Metal Lath
THE SPIRAL TWIST IS "THE TIE THAT BINDS"
ENDORSED AND USED BY THE UNITED STATES GOVERNMENT.
MANUFACTURED BY
IMPERIAL EXPANDED METAL CO.
1536 MONADNOCK BUILDING, CHICAGO, ILL., U.S.A.

Steel Concrete
Kuhne's Sheet Metal Structural Element for Fire-Proof Construction. Floors, Stairs, Partitions, Furrings, Outside Walls, Roofs, Sidewalks, Trunk Sewers, Tanks, etc.
TRUSS METAL LATH COMPANY, Mfrs.
15-25 Whitehall St., New York.

A SAMPLE COPY OF
TOPICAL ARCHITECTURE
will be sent Free to any address.
THE AMERICAN ARCHITECT, Publishers, Times Building, New York.

Kansas City, Mo.—The Sisters of St. Mary, of St. Louis, have procured a piece of ground 275 x 233 ft. on Main St. and Baltimore Ave., which they will use as the site for a charity hospital building, costing $70,000. Work will commence in the Spring. The plans will be such as will permit additions when needed and the finished structure will represent a cost of about $150,000.

Kearney, N. J.—The Board of Education will receive bids for erecting additions to schools Nos. 4 and 5 at a cost of $49,000.

Lebanon, Pa.—The Supervising Architect, Washington, D. C., will receive bids until March 27 for the construction complete of the U. S. Post Office, as advertised in The American Architect.

Los Angeles, Cal.—John A. Mason intends building a new 5-story brick hotel on on Hill St., between 1st and 2d Sts., 65 x 126 ft. and costing $65,000.

The Union Hardware & Metal Co. has purchased the property bounded by Jackson, Alameda and 1st Sts. and Central Ave., upon which it will erect larger quarters and make other improvements.

Louisville, Ky.—Local papers state a building permit has been granted to the Louisville & Nashville Ry. for an 11-story steel, stone and brick 200 x 60 ft. office building to be erected at Broadway and 15th St., at a cost of $300,000.

Lexington, Ky.—Drawings of the new auditorium to be built in Woodland at a cost of $20,000 are on exhibition in the office of Mayor Combs. The seating capacity will be 5,000. Copeland & Doyle, Exchange Place, New York, are the architects.

Madison, Wis.—The commission on the new capitol building has decided on a $5,000,000 building constructed of marble.

Massillon, O.—A new church edifice will be erected in this town. Rev. S. S. Bigger is pastor.

Morristown, N. J.—The loss entailed in the burning of Otto H. Hahn's house on Feb. 3 is reported at about $400,000. It is understood that work on the rebuilding of the structure, which is now totally wrecked, will be started as soon as the weather permits.

Milwaukee, Wis.—The School Board Committee on Rules will recommend to the legislature that the board be empowered to erect its own buildings and employ a competent architect to supervise the drawing of plans and the erection of the buildings.

Muskegon, Mich.—Bids will be received March 8 by Jos. Knox Taylor, Supervising Architect, Treasury Department, Washington, for constructing a U. S. Post Office and Court House here.

Montclair, N. J.—E. Madison, secretary of the Board of Education, has stated that contracts will soon be let for the new Hillside Grammar School, which will cost $150,000.

Meridian, Miss.—The plans of Frank P. Milburn, architect, Columbia, S. C., for the new union station here, have been accepted by the Meridian Terminal Co., and bids will soon be called for. The structure will be 55 x 400 ft., and will cost, approximately, $250,000.

Magnolia, Ark.—Bids are wanted by the Commissioners of Columbia County about March for erecting a courthouse. Particulars can be had from Wm. S. Hall, Jackson, Miss., the architect.

Minneapolis, Minn.—The Improvement Committee of the Board of Park Commissioners has awarded Downs & Eads, architects, 208 N. Y. Life building, first and second prizes for their designs for the Minnehaha Pavilion. Work will start as soon as plans are finished.

New Orleans, La.—Favrot & Swandale, architects, 839 Gravier St., are, it is said, preparing plans for the Senses Hospital to be erected on Basin St. to cost $125,000.

New York City.—The First Presbyterian Church contemplates the erection of a new building on Fifth Ave. between 11th and 12th Sts., at an estimated cost of $500,000.

New York City.—Bids are asked by the Board of Education, Park Ave. and 59th St., until Feb. 14, for erecting public school 66 on Watkins and Osborn Sts.; $170,000 deposit required on general contract, also for additions and alterations in public school 23, on Andros and Mesereau Aves., Borough of Richmond. C. B. J. Snyder, Supt. School Buildings.

Bids are wanted by John McG. Woodbury, Commissioner Street Cleaning, until Feb. 15, for erecting a rubbish incinerator between Tompkins and East Sts.

Newark, N. J.—An expenditure of $650,000 will be made by the Committee on Schoolhouses of the Board of Education for the erection of four new schools and the purchase of a site for a new high school.

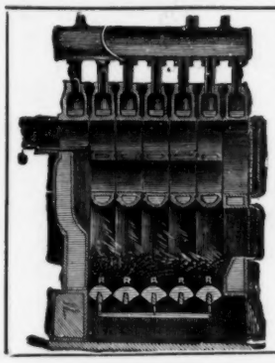
New Haven, Conn.—E. W. Maynard, architect, 226 Tremont St., Boston, is said to be receiving bids for the new theatre to be erected in the rear of 23 Church St.

Northampton, Mass.—The trustees of Smith College are reported considering the erection of an administration building for which $100,000 was recently donated.

Omaha, Neb.—A business college building, costing $40,000, will be built by the Omaha Commercial College. Plans are being drawn by J. B. Mason, Brown Block.

Onalaska, Wis—The Onalaska Woolen Mill Co. will put up a new and larger plant as soon as a site can be obtained. The plans provide for a three-story brick and stone structure.

Oskaloosa, Ia.—The local press reports a popular movement for the erection of a City Hall at a cost of about $40,000.



THE H. B. SMITH CO.
133-135 CENTRE ST. NEW YORK

MANUFACTURERS

Steam and Water

Heating Apparatus

Factory: Westfield, Mass.

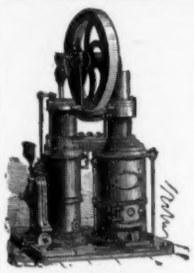
ESTABLISHED 1853. NEW YORK, PROVIDENCE,
Send for Catalogue. PHILADELPHIA.

NEW ENGLAND TANK and TOWER CO.

Water Tanks, Steel Tank Towers, Pumps, Engines, Windmills, Etc.

Contractors for Village, Farm and Suburban Water Supply Systems.

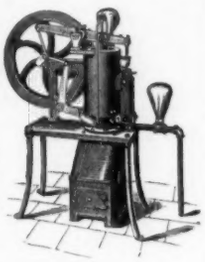
8 OLIVER STREET
BOSTON



.. WATER ..

RIDER & ERICSSON HOT-AIR PUMPING ENGINES

If water is required for household use, lawns, flower beds or stable, no pump in the world will pump it so safely, cheaply and reliably. No danger, as from steam. No complication, as in gasolene engines. No uncertainty, as in windmills. Prices reduced. Catalogue "B" on application.



RIDER-ERICSSON ENGINE CO.

35 Warren Street, New York
239 Franklin Street, Boston
692 Craig Street, Montreal, P. Q.
40 Dearborn Street, Chicago
40 North 7th St., Philadelphia
Teniente-Rey 71, Havana, Cuba

THE GEORGIAN PERIOD

STUDENTS' EDITION.

Consists of the leading article on Old Colonial Architecture from the complete edition and 100 full-page plates chosen for their value to students.

PRICE, $15.00.

THE AMERICAN ARCHITECT,
TIMES BUILDING, NEW YORK.

PERU, IND.—An exchange states that the question of a new Court House at a probable cost of $300,000 is under consideration.

PINE BLUFF, ARK.—We learn from local papers that the St. Louis, Iron Mountain & Southern Ry. have submitted propositions for the erection of a passenger station. One provides for a union station with the Cotton Belt Ry. at a cost of $75,000; the other for a station for its own use at a cost of $40,000.

PHILADELPHIA, PA.—Peter Kuhn, architect, has completed plans for 30 dwellings and three stores, each 16 x 57 ft., on 19th St., north of Wingohocking, for James J. Munday, and for 13 three-story dwellings, each 16 x 57 at 17th St. and Erie Ave., for Daniel J. Munday.

PITTSBURGH, PA.—The Western University, through Chancellor Samuel B. McCormack, will ask the State legislature for an appropriation of $500,000 to help build the university buildings.

The Breuning Cork Co. has had plans prepared for an addition to its Oakdale plant, 140 x 150 ft., and of brick construction.

Orth Bros., architects, are preparing plans for the new office building for the Pittsburgh Coal Co. and expect to have them ready for figures early in the Spring.

READING PA.—The local press states a committee has been appointed to secure plans and specifications for the enlargement of the Homeopathic Hospital and for the erection of a nurses' home. Work, it is said, will begin early next Spring.

ROCHESTER, N. Y.—Work in the Buffalo, Rochested & Pittsburgh R. R. Co.'s 5-story building at Main St., West, and South Washington St., will begin about the middle of March. It will be 115 x 175 ft., and cost about $400,000.

SALEM, MASS.—We learn from an exchange that the County Commissioners have purchased a site on Federal St. on which to erect the proposed new Court House, at a cost of $250,000.

SEATTLE, WASH.—A department store will be built by Geo. Kinnear at Pike St. and Fourth Ave., costing about $175,000. John Graham, Globe Building, has prepared plans for a structure of steel, terra-cotta and concrete.

SELLWOOD, ORE.—The $60,000 capital stock of the T. W. Clark Woolen Mill Co. has been subscribed and the mill will be built at once. It will have water and electric power.

SYRACUSE, N. Y.—It is stated the Polish Catholic Church congregation contemplate the erection of a new church, to cost $30,000.

SUPERIOR, WIS.—The Supervising Architect, Washington, D. C., will receive bids until March 25 for the construction of the U. S. Post Office, Court House and Custom House, as advertised in THE AMERICAN ARCHITECT.

SOUTH OMAHA, NEB.—Press dispatches state a site has been purchased on 25th and G Sts. on which it is proposed erecting a hospital to cost about $25,000.

TOLEDO, O.—The Finlay Brewing Company, Summit St., will convert the building formerly occupied by the German Express daily, into an European hotel containing 75 rooms. Several thousand dollars will be spent in remodeling and enlarging the building.

TOLEDO, O.—George Ketcham, owner, who contemplates the alteration of the Valentine Theatre building into a hotel, has ordered his architects, Landon & Hobly, 901 Spitzer building, to arrange for the addition of three stories. Previous plans had been completed for two stories, but the new plans provide for a great many changes and the expenditure of an additional $60,000, making the total expenditure in alterations and furnishings over $200,000.

VINCENNES, IND.—A contract for a new lodge building, costing $40,000, is soon to be awarded by the Elks, it is said.

WASHINGTON, D. C.—A new clubhouse for the Metropolitan Club is talked of. Admiral John G. Walker is president.

The designs of B. Stanley Simmons, architect, 523 Ninth St., N. W., for the proposed new Police Court Building, have been accepted. The structure will be located at Sixth and D Sts., and will cost $70,000.

The Metropolitan Citizens' Bank will spend about $400,000 on its proposed new 8-story bank and office building.

Julius Wenig, 655 New York Ave., has plans for the three residences to be built by Peter Fersinger, 111 Rhode Island Ave., N. W., at a cost of $20,000.

Wood, Donn & Deming have completed plans for a $30,000 residence for C. A. Douglas, 2012 Wyoming Ave.

WASHINGTON, D. C.—We learn of a new national temple projected by the Central Labor Union of this city, that body having appointed a committee of 12 members to consider plans for such a structure.

WEEHAWKEN, N. J.—A tract of land containing 12 acres has been purchased in the Shadyside Section, along the Hudson River, by James Pyle & Sons, manufacturers of "Pearline," of Greenwich and Vestry Sts., New York. Plans for the new buildings have been drawn by Lockwood, Green & Co., architects, of Boston, Mass., who will soon be ready for figures.

WHITE PLAINS, N. Y.—Howard Willets, owner of the Auditorium Theatre here, will spend $20,000 in remodeling it.

WINONA, MINN.—A new $50,000 building will be put up by the Y. M. C. A.. R. E. Squires, Sec'y, can give information.

WESTFIELD, N. Y.—We learn that the trustees of the Patterson Library have accepted plans prepared by E. E. Joralemon, of Niagara Falls, for the library building to be erected this Summer at a cost of about $60,000.

CLEANING

whether given frequently by the careful housemaid or strenuously by the zealous janitor, does not destroy the original brightness of

Benedict-Nickel

SEAMLESS TUBING

It is "white metal clear through" and there is no plated surface that can be worn away by rubbing.

All products including Seamless Brass and Copper Tubing are described in our "Table Book."

Benedict & Burnham Mfg. Co.

WATERBURY, CONN.

New York
253 Broadway

Boston
172 High Street

Iron
Door and Window
Grilles

104 Plates, 10x14 Inches.

PRICE:

Red Cloth, Gilt Top - - - - $7.50
In Portfolio - - - - - - 6.50

CATHEDRAL
OF
ST. JOHN THE DIVINE

Illustrating the Competitive Designs for the great Protestant Episcopal Cathedral now being erected in New York.

Price, Bound $4.00
" in Loose Sheets..... 2.50

THE AMERICAN ARCHITECT

"THE LIBRARY OF CONGRESS"

20 Plates, folio. Price, $5.00.

The American Architect, Publishers,
New York and Boston.

The American Architect
PUBLISHERS

Times Building
NEW YORK

New England Material-Men and Contractors

ASBESTOLITH.

SIMPSON BROS. CORPORATION,
Room 58.
166 Devonshire St., Boston, Mass.

BLUE PRINTING.

CHAS. E. MOSS,
Rapid Printing Papers.
38 Broad St., Boston.

BLUE PRINTING (Continuous).

SPAULDING PRINT PAPER CO.,
44 Federal St., Boston, Mass.

BUILDINGS TORN DOWN.

A. A. ELSTON & CO.,
166 Devonshire St., Boston, Mass.

CONCRETE-STEEL CONSTRUCTION.

SIMPSON BROS. CORPORATION,
Room 58.
166 Devonshire St., Boston, Mass.

CONTRACTORS & BUILDERS.

WILLIAM L. RUTAN,
1016 Tremont Bldg., Boston.

ELECTRICAL CONTRACTORS.

ERICKSON ELECTRIC EQUIPMENT CO.,
280 Devonshire St., Boston.

FIRE-ESCAPES.

STANDARD FIRE-ESCAPE & MFG. CO.,
120 Milk St., Boston, Mass.

MASONS AND BUILDERS.

MORRILL & WHITON CONSTRUCTION CO.,
35 Federal St., Boston, Mass.

MODELLING AND ORNAMENTAL PLASTER.

SLEEP, ELLIOT & KING CO.,
351 Cambridge St., Boston.

ORNAMENTAL PLASTERING.

HERBERT FOWLE,
43 Bristol St., Boston, Mass.

PHOTOGRAPHY.

LEON E. DADMUN,
11 Portland St., Boston, Mass.

PORTABLE OVENS.

H. A. JOHNSON & CO.,
224 State St., Boston, Mass.

ROOFING DUCK.

C. H. BATCHELDER & CO.,
234 State St.,
Boston, Mass

SASH CORD.

SILVER LAKE CO.,
78 Chauncey St., Boston

SEAM-FACE GRANITE.

GILBRETH SEAM-FACE GRANITE CO.,
Park Row Building, New York.
176 Federal St., Boston

STABLE FIXTURES.

BROAD GAUGE IRON STALL & VANE WORKS,
53 Elm St., Boston, Mass

STONE CARVING AND MODELLING.

HUGH CAIRNS,
48A Sudbury Street, Boston

WATERPROOF CELLARS.

FRANK B. GILBRETH,
Park Row Bldg., New York.
176 Federal St., Boston.